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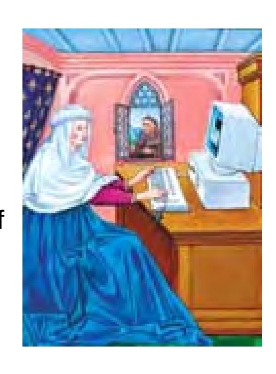
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Reporting on a thousand years

Dec 23rd 1999



Ten centuries have transformed mankind's wealth, numbers, work, lifestyles, rights, literacy, communications and understanding of the world. A special issue on what has mattered most during the millennium, edited by Stephen Hugh-Jones

United States

The Americas

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Economic and Financial Indicators

Millennium quiz

What happened to Peter the Great's eldest son? Which country was the first to give women the vote? Test your knowledge of the past 1,000 years... more



Millennium issue

The world this millennium

Dec 23rd 1999

From The Economist print edition

Despite widespread expectations, **the world did not end** as 1000 dawned.

China in 1024 issued the first **paper money.** A Swedish bank followed suit in 1661.

See article: 1661 Sweden's new paper money

In 1099 the **first crusade** captured Jerusalem from the Muslims; in 1187 Saladin took it back. In 1453 Turkish Muslims took Constantinople. In 1492 Christians took Granada, the last Muslim state in Spain.

See article: 1099 Crusaders take Jerusalem

A **university** was founded at Bologna towards 1100, at Paris and Oxford in the 1100s, Salamanca in 1218, Heidelberg in 1366. Harvard came in 1636.

See article: The spread of education

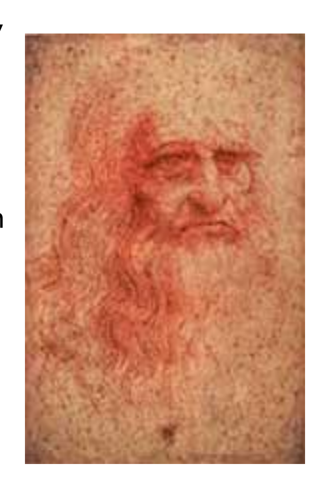
From 1206, **Mongol armies** spread across central Asia, into Eastern Europe, the Middle East and, by 1279, all of China. But in 1368 a Chinese dynasty was restored, and a defeat in Russia in 1380 began the western Mongols' downfall.

See article: 1242 The Mongols look east

From around 1250, European sailors began to use the (Chinese-invented) **magnetic compass**. In 1433 China's last long sea-expedition ended.

See article: Mapping the globe

Cimabue was born by 1251, Dante in 1265, Petrarch in 1304, Leonardo da Vinci in 1452, Machiavelli in 1469, Michelangelo in 1475, and with them Europe's **Renaissance**.



See article: The artist and the model

Italian banks were flourishing by 1300—though default by England's King Edward III in the 1340s brought a huge financial crash.

See article: 1400s The Medici bank

The **Black Death** in 1347-49 killed millions in Asia and North Africa, and maybe one European in three.

See article: 1348 The Black Death strikes

The first European book printed with **movable type** was published in 1457.

See article: 1045 The printed word

In 1492 **Cristobal Colon** sailed the Atlantic. In 1519 a Spanish force seized the Aztec capital in Mexico. Latin America in 1810-25 broke free from Europe—under, everywhere, ethnic-European rule.

See article: 1822 The liberators meet

Martin Luther nailed his 95 theses criticising papal "indulgences" to a church door in Wittenberg in 1517. The Reformation, splitting western Christendom, was on its way.

See article: 1521 Luther on the stand

From 1524, Turkic invaders created the Muslim **Mughal empire** in India. From the 1750s British ones took it over.

See article: 1556 Multicultural Akbar

In 1553 the Muscovy Company, of London, issued the first **equity shares**. The first limited-liability law came in 1811, from New York state.

See article: 1811 Limited liability is born

From the mid-16th century until the 19th, Europeans shipped maybe 12m Africans, bought from their African captors, across the Atlantic as **slaves.** Arab slavers took millions more to the Middle East.

See article: 1789 One slave among 12m

In 1600 the English **East India Company** was set up, in 1602 the Dutch one; big steps for world trade, giant ones to European rule in Asia.

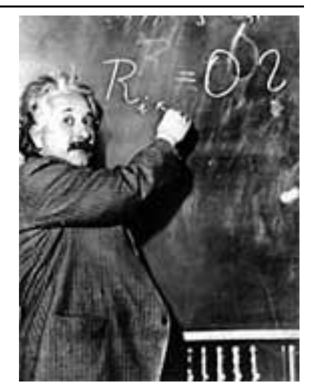
See article: 1614 The East India companies

Japan cut itself off in 1639 from the outside world, to reopen only in 1853—and catch up on three centuries of western technology in one.

See article: 1639 Japan shuts the door

Ruler from 1682 to 1725, Peter the Great tried to **modernise Russia**. From 1924 to 1953, Joseph Stalin tried again.

See article: 1718 A Russian show trial



Newton published his “Principia”, setting out the **laws of motion**, in 1687; Darwin his “Origin of Species” in 1859; Einstein his special theory of relativity in 1905.

See article: 1684 Newton’s calculus

From 1733, John Kay’s flying shuttle and (1769) Richard Arkwright’s spinning machine revolutionised textiles, mankind’s biggest industry. Driven by James Watt’s steam engine (1765), the machines, ships and railways of the **industrial revolution** gave the world a new economy, society and (briefly) top dog, Britain.

See article: 1765 One Watt of steam

The future United States in 1776 declared itself independent of Britain, and all men created equal; and stuck to slavery until 1865. France in 1789 rose against its royal regime and proclaimed **the rights of man**; and in 1804 hailed its ruler, Napoleon Bonaparte, as emperor.

See article: 1776 The Second of July

Europe in 1848 burst into near-revolution. Little came of it at the time—except Karl Marx’s **Communist Manifesto**.

See article: 1848 Marx on capitalism

America’s first **oil well** was drilled in 1859. The first Middle East oil strike came in 1908.

See article: 1700-?? Coal and oil...

Eleven slave-owning states seceded from the United States in 1860-61, but by 1865 had lost the resultant **civil war**.

See article: 1852 Misjudging Uncle Tom

In 1861 the tsar **abolished serfdom** in Russia. In 1917 Marxists seized power there.

In 1861 a unified Italy was proclaimed, in 1871 a unified Germany. The **nation state** had triumphed; many new states and many wars followed.

See article: 1860 Garibaldi’s thousand

In 1876 Alexander Bell showed off his telephone, in 1879 Thomas Edison his electric lighting; in 1903 Orville and Wilbur Wright took to the air; in 1908 Henry Ford launched his Model T car; 1946 brought the first general-purpose computer; 1947 the first transistor. All **made in America**.

See article: 1879 Edison lights up

In 1912 a republican regime replaced **China’s imperial dynasty.** In 1949 Mao Zedong made it a communist one.

1914-45 brought **disaster**: a huge European war; a communist coup in Russia; global slump; Nazi takeover in Germany; Japanese attacks on China; a world war and Nazi murder of millions of Jews; and the first use of nuclear weapons, against Japan.

See article: 1924 Stalin, 1933 Hitler: evil reigns

From the late 1940s, **Europe's colonies** won independence. Many soon succumbed to authoritarian rule of their own.

See article: 1930 Gandhi, salt and freedom

From 1945 to 1989, a capitalist block led by the United States and a communist one led by the Soviet Union and China fought a **cold war**. In 1991 the Soviet Union fell apart. China, still communist in name, rediscovered market forces.

In 1969 an American spacecraft landed the first two **men on the moon**.



As 1999 ended, millenarian loonies declared **the world about to end** too.

The millennium of the West

Dec 23rd 1999

From The Economist print edition

THIS has been the millennium of the West: first Europe, later its offshoots too, above all the giant one in North America. It has exported worldwide its soldiers, missionaries and empire-builders, its religion and its ideas, its arts and its sciences, its goods and its technology, its political and business systems, even its principal currency. Like it or not (and much of the world often has not), for the moment the West has triumphed.

Nothing proves the triumph will endure. Already one quite small Asian nation, Japan, has made a huge mark on the world economy. Who knows what will happen when China and (surely, one day) India really get moving? Already Christianity, the faith once almost synonymous with Europe, is decaying in its homelands—as its rival, Islam, is not. Electoral democracy, the rule of law, the tolerance of dissent, the belief in individual rights: all of these, which now seem characteristic of the West, are quite recent inventions, repeatedly trampled down in the region that proclaims them; and there is no guarantee (though fair reason to expect) that they will last, there or elsewhere. Still, for now, the world is one largely shaped by the West.

It is in this perspective that *The Economist*—part of that West, sharing its hopes, its beliefs and its prejudices—reports the millennium that has brought this world about. History is written by the victors, and those of 2500 or 3000 may have a very different view of what mattered in our past 1,000 years, let alone theirs. But here we are, now.

The following pages report what seem, from that standpoint, the greatest changes of our millennium: such things as the astonishing multiplication of human wealth, of the human race, and of the knowledge, skills and communication that have enabled both to happen. We report too the events—not all great ones in themselves—that typify these: anything from the first crusade through the birth of banking to the Dutch purchase of Manhattan island, Japan's *zaibatsu*, the world wars and the contraceptive pill. The main trends get sizeable articles of their own; that apart, the structure of this issue is much what readers are accustomed to—even to two pages of statistics, heroic ones some of them—seeking to do for a millennium what we usually do for a week. With one exception, our viewpoint too is the usual one: we write from the present day, with the happy benefit of some years, or centuries, of hindsight. The exception is our columnists. We've given them leave to step back in time. The results include an Economics Focus review of a new work on wealth by a Scottish economist called Adam Smith; and Lexington imagining the outlook for an ex-United States, after a post-war talk in the Confederate capital with a happy President Jefferson Davis.

What stands out from this hurtle through history is how far from predictable our millennium was. If some European Rip Van Winkle had gone to sleep in 999, he'd have had no great reason to expect (and plenty not to) what he saw when he woke up this week. The West triumphant? In 999, the older civilisations of China and India were also, in many fields, more advanced. To Europe's east was to come a Mongol empire larger than Rome's had ever been; and then a Turkish one that would live far longer than those of Britain or even Spain. Across the Atlantic lay other cultures that might, given more unity and less trust, have driven back the future invaders from Europe. In Van Winkle's own continent, Christianity was dominant, but the liveliest culture was Muslim. Europe was yet to acquire from Arabs the basics of public hygiene and health, the navigators' instruments that would one day take its galleons to the ends of the earth, the very zero and notation that would enable its scientists to calculate; even much of its own Greek past. Europe was to surpass them all. And yet only 80 years before the sleeper woke up, Oswald Spengler's "The Decline of the West" would strike a powerful

chord. And no wonder: the European heart of the West had just torn itself apart in one gigantic internecine war and would soon be preparing for another.

And knowledge and wealth, health and population, institutions and ideas? Why should Van Winkle expect these to flourish during his long sleep? Mankind had never experienced—and may never again—the huge advances that it, so swiftly, was about to achieve. Europe, their future source, had just endured some miserable centuries. It was good at violence. But its builders of roads, bridges and houses, many of its craftsmen and farmers, were yet to get back to the level of the Romans. So, west of Byzantium, were its artists, law-givers and writers, struggling in a Latin that few of their countrymen could read, let alone understand. True, the Bible promised 70 years of life, but it was surely God’s will that most adults in fact had 30 or 40. And when three or four infants died in every ten, who could imagine that the figure would one day be six or seven per 1,000—or even want it, given the way babies multiplied and food supplies didn’t? As for ideas and institutions, why pretend that all men—nay, women!—would ever, anywhere, stand equal before a just law, justly administered? That powerful men would anywhere cease to act as such men always had, let alone give up their power just because their fellow-citizens put papers into a box saying they ought to? Why would anyone believe in progress?

Anyway, Van Winkle had the next world to console him. And was even this one so bad? God, after all, had created it, and set moon, sun and stars to circle round it, had He not?





The road to riches

Dec 23rd 1999

From The Economist print edition



Western man is incomparably richer than his ancestors of 1,000 years ago. And he takes it for granted that he will grow richer still. Yet, seen in its long-term context, the past 250 years' rise in incomes and living standards looks less like an inevitable process and more like a single, astonishing event

FOR nearly all of human history, economic advance has been so slow as to be imperceptible within the span of a lifetime. For century after century, the annual rate of economic growth was, to one place of decimals, zero. When growth did happen, it was so slow as to be invisible to contemporaries—and even in retrospect it appears not as rising living standards (which is what growth means today), merely as a gentle rise in population. Down the millennia, progress, for all but a tiny elite, amounted to this: it slowly became possible for more people to live, at the meanest level of subsistence.

From about 1750, this iron law of history was broken. Growth began to be no longer invisibly slow nor confined, as it largely had been before, to farming. The new increase in human productivity was staggeringly large: it not only supported a hitherto unimaginable 7 1/2-fold rise in the world's population, but entirely transformed the lives of ordinary people throughout the West.

This surge of growth was due to industrialisation. Thanks to it, material prosperity has risen more in the past 250 years than in the previous 10,000. And so conditioned to growth have people become that most westerners now expect their standard of living to improve automatically year by year; if it does not, something is wrong. This taking for granted what would once have seemed miraculous is the measure of the change.

What, why, there, then?

What happened? And why at that particular time, in that particular place, Western Europe and its American offshoot? The answer to the first question seems straightforward: technology happened. Yes, but that doesn't tell us much: "better technology" is much the same thing as "economic growth". The real issue is: why? What set off this technological upheaval, and why there and then?



One theory goes as follows. Technology is driven by knowledge, and especially by scientific knowledge. Knowledge is cumulative: once it exists, it does not cease to exist. So this process of accumulation, with discovery building on discovery, is strongly self- reinforcing, with a built-in tendency to accelerate. When a certain critical mass of knowledge exists, the pace of future accumulation can increase very sharply, as previously unsuspected connections between different branches of knowledge are exploited, each breakthrough creating new opportunities. If something like this is correct, then a technological take-off point was bound to come along somewhere, some time.

Take-off

GDP per person in Western Europe, $'000, 1990 prices

Domesday Book shows 5,624 watermills in England south of the Severn
Padded horse collar (around 1100); first recorded windmill with vertical sails rotating about horizontal axis (1185)
Invention and development of compass; year-round navigation in Mediterranean after 1250
Gutenberg's printing press
Blast furnace
First telescopes; Huygens invents pendulum clock (1658)
Advances in large-scale hydraulic engineering; Languedoc Canal joins Atlantic and Mediterranean (1681)
Mechanisation in farming; steam engines; Arkwright's spinning machine (1769); Crompton's mule (1779); bridge at Coalbrookdale, England, first structuraluse of cast iron (1779)
Volta's electric battery (1800); electromagnetic telegraph (1833); first transatlantic telegraph cable (1858); Bell's telephone (1876); Edison's carbon-filament lamp (1878); Marconi's wireless patent (1896)
Bessemer and Siemens-Martin (open-hearth) processes for making steel
Car powered by internal-combustion engine (1885); Henry Ford's Model T (1908)
Powered flight (1903)

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1 1000 1050 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000

Source: Angus Maddison

Why, then, did it come along in 18th-century Europe? On this view, because the scientific preconditions were in place. European science had flowered in the 17th century—the age of Galileo and Newton, of Hooke and Huygens. These and others, note, were technological innovators as well as scientists. Galileo, a pioneer of mathematics and astronomy, made telescopes and other instruments. Hooke, he of Hooke's law of the compression and extension of elastic bodies, a brilliant chemist and physicist, built an air pump and developed balance-springs for watches. Huygens, a mathematician and physicist, invented the pendulum clock, and proposed a kind of internal-combustion engine (using gunpowder for fuel); even Newton, generally disdainful of technology, worked on improving the marine sextant and invented the reflecting telescope.

Mathematics and mechanics had come together. By the end of the 17th century, understanding and application had converged. Knowledge had expanded, you might say, up to and beyond that point of critical mass. The intellectual foundations for the technological revolution were in place.

The discovery of atmospheric pressure is probably the best illustration of how an early scientific finding gave rise to a crucial new technology. The technology in question was literally the driving force of the industrial revolution: the steam engine. Evangelista Torricelli and Otto von Guericke were the first Europeans to show that the atmosphere existed; in 1654 von Guericke, mayor of Magdeburg, demonstrated the fact with his



famous public experiment in which teams of horses were unable to separate two hemispheres that had had the air between them drawn out. Many others then began to explore the possibilities of harnessing this atmospheric force as a source of power. After more than a century of improvements and iterations, the result was James Watt's celebrated steam engine, which went into full-scale production in 1774.

This "science leads technology" theory is plausible. Large parts of it are undoubtedly true—yet as it stands it will not quite do.

Central though it may be to the history of the industrial revolution, the case of atmospheric pressure and the steam engine is far from typical. Until the latter part of the 19th century, technological progress did not in general rely on scientific progress. Few of the inventors responsible for the astonishing wave of innovation between 1750 and 1860 were scientists; most were artisans or engineers with little or no scientific training. They were men of common sense, curiosity, energy and vast ingenuity, standing on the shoulders not of scholars but of similarly practical types. Their goal was not to understand, but, as Watt said of his own efforts, to make machines that worked better and (he emphasised) at lower cost. And remember that, for every one who succeeded in this aim, perhaps another hundred tried, at great expense of money and time, only to fail.

Few of the inventors responsible for the astonishing wave of innovation between 1750 and 1860 were scientists

This was true across the whole range of 18th-century industries. For about 100 years after 1750, radical innovations in shipbuilding, mining, metallurgy, textiles, food-processing and machine tools were the fruit not of scientific breakthroughs but of indefatigable trial and error, under the guidance of experience and craft tradition. The improvements in cotton-spinning that were soon to transform the British economy—from Arkwright's spinning machine to Crompton's mule—had not been waiting upon science. So far as science was concerned, these technologies could have been invented decades or even centuries earlier.

At the start of the 19th century, a Frenchman, Nicolas Appert, found that food could be preserved in bottles that had been boiled and sealed airtight. Within 20 years, tin-coated cans came into use. It was a crucial innovation for the development of urban society. But Appert did not know why his process worked, nor did anybody else; Louis Pasteur did not discover the role of micro-organisms in spoiling food until 1873. First came work, inspiration and luck; later, chemistry.

After 1860 or so, gradually at first and then more rapidly, science began to play a bigger role. Chemistry was indeed the first industrial science. Soon the better understanding of chemical phenomena gave rise to new industrial techniques and, more important, to new materials and entirely new goods. When physics became an industrial science, the results were even more startling: electricity and telecommunications. Thomas Edison, a remarkable pioneer in these fields, was a transitional figure. He was trained as a telegraph operator, not as a scientist. In 1876 he set up his legendary "invention factory" at Menlo Park, New Jersey, began hiring scientists, and set them to solve industrial problems. It was the first industrial research laboratory: the modern pattern was established.

A question of timing

Yet the fact remains that the decisive break between the economic stagnation which kept most of mankind in poverty for thousands of years and the modern era of rapid innovation and growth occurred fully a century before science was harnessed to technology. Moreover, western science had already moved significantly ahead of that of other societies by the beginning of the 17th century; yet the West was no richer at that time than

those other societies. It was another 150 years before the real surge in western growth began. The link between science and technology is subtler than you might think.

In its day, ancient Greece was pre-eminent in science. But the knowledge of Aristotle and his students was never applied in the economic realm. The Romans continued that tradition. Far ahead of the barbarians of early medieval Europe, they also established what many today regard as the preconditions for growth in the third world and in the ex-communist economies of Eastern Europe—physical infrastructure and the rule of law. Yet more was achieved in technological innovation during the five or six "dark" centuries after the collapse of the Roman empire than in its heyday. One example: among the most significant innovations of the early Middle Ages was a horse-collar that did not half-throttle the animal as soon as it began to pull with any force. The sophisticated Romans had accepted this handicap, and the flimsy chariots and lack of heavy transport that went with it, for centuries.

More was achieved in technological innovation during the five or six "dark" centuries after the collapse of the Roman empire than in its heyday

But there is a greater puzzle than all this: the course of China's economic development after 1400. In a different way, this poses an even greater challenge to the view that science and technology move in a virtuous, self-sustaining, naturally accelerating circle.

At the start of the 15th century, China's supremacy in science and technology alike was dazzling. The economy was on the verge of industrialising. Farming was technologically advanced, using sophisticated hydraulic engineering, ingenious ploughs and other tools, various natural and artificial fertilisers, and carefully documented veterinary medicine. The casting of iron, requiring blast furnaces, began in China before 200BC, in Europe some 1,500 years later.

China invented paper about 1,000 years before the idea reached the West. It was printing by the 8th century, and using a form of movable type by the 11th, four centuries before Johannes Gutenberg got round to it (in a superior, cast-metal, version) in Europe. More mundanely, the Chinese thought of the wheelbarrow in about 200, a fine invention not used in Europe until the 12th century. And that non-throttling horse-collar dreamed up by medieval Europe was in use in China from 250BC. Add in explosives, ship design, clock making, weaponry and so on, and the list seems endless.

Then, after about 1400, China's technological progress slowed. By 1600 it had fallen behind Western Europe. By 1800 the gap was very wide. It is thought that the Chinese understood atmospheric pressure before the West; but they did not develop the steam engine. The spinning wheel appeared in China about when it did in Europe; but the elaborations that gave Europe the spinning jenny and the industrial production of textiles never followed. In some cases what happened was worse than stagnation: ideas were lost. Su Song's "great cosmic engine" of 1086—an elaborate water-powered clock, 13 metres high, which tracked time and the positions of the moon and planets—was forgotten by the 16th century.

Science and technology, in short, can get far and then stop

Science and technology, in short, can get far and then stop. The same happened to Islamic science, which achieved great sophistication up until around 1200, and then came almost to a halt. What happened in Western Europe in the 17th and early 18th centuries that failed to happen in the Western Europe of antiquity, or in China after 1400, or in the Islamic world after 1200?

The question is ferociously debated by economic historians: there is no consensus on the factor that played the single most important role. But there is pretty wide agreement that three broad and overlapping things, between them, made the difference: values, politics and economic institutions.

The bases of progress

Economic growth is a process of economic change. So an appetite for change, or at least a willingness to live with it, is essential if a society is to get richer (except by conquest). This helps to account for China's falling behind. Its elite valued stability above all. New ideas, especially foreign ones, were suspect. Until the 15th century, the social order could accommodate technological progress reasonably well. The faster and deeper changes required in the early stages of industrialisation were another matter. China's rulers often blocked change: in the 15th century they ended long-sea trade ventures, choking off commerce and shipbuilding alike.

A readiness for change is only one of the values required. Acquisitiveness is another—an interest in worldly goods, a regard for the material as well as the spiritual, a will to exploit nature for man's benefit. Yet naked greed is no use. Growth requires investment—and investment is gratification deferred. The enlightened self-interest praised by Adam Smith combines the desire for wealth with prudence and patience.

Growth also requires another kind of selflessness. A modernising society has to move away from self-sufficiency, in individual households, villages, towns, regions and states, towards interaction at all those levels, through specialisation and trade. This in turn demands that enlightened self-interest include an ethical component. Without trust and regard for one's reputation, the wheels of commerce do not spin.

Altogether, it is an improbable blend. Partly through religion, however, Western Europe developed a system of values that favoured all of the above. Other cultures, it seems, were less conducive to growth. The ruling elites of antiquity, for instance, prized military prowess and intellectual achievement above all; the mundane business of getting and spending was beneath their dignity. China's rulers, in their own way, were equally uninterested in economic progress.

From time to time, of course, western elites also tried to resist change. But this is where politics comes in. The rulers concerned were always rivals. For the past 1,500 years, no unitary system of control has ever been imposed across Western Europe as a whole. The Roman empire and imperial China stand in marked contrast.

China's rulers could ban some advance, and their ban was obeyed. Europe's regimes might try such things. Some did: Florence issued an edict in 1299 forbidding bankers to use Arabic numerals; in 1397 Cologne ordered its tailors not to use machines; after the invention of the ribbon loom in 1579, the city council of Danzig is said to have ordered the inventor to be drowned. But their efforts were in vain, indeed self-damaging: a rule that hurt the economy hurt the state that made it, as against others economically more enlightened. In Europe, rivalry among governments wore away at the interests opposed to economic growth.

In Europe, rivalry among governments wore away at the interests opposed to economic growth

In this pluralistic setting, the institutions conducive to growth gradually took shape. Within each state, under a variety of pressures, the economic sphere came to be separated from political control. Magna Carta, which ended the quarrel between King John and his English barons in 1215, established the rights of subjects to their own property, protecting them from the threat of

arbitrary confiscation by the crown. It also gave protection to merchants, English and foreign. A new kind of "property right" was recognised for the first time.

Over the next few centuries this slowly nurtured another, no less important, kind of pluralism. A crucial aspect of the separation of politics and economics was that producers (farmers and merchants, in the first instance) kept some of the fruits of their success: the incentive to compete and innovate was in place. In contrast, in China the state long continued to play a central, dominating economic role—and innovators were usually civil servants, with no stake of their own in growth. Arbitrary seizure remained common in the Asian and Islamic worlds; merchants, in effect, were forbidden to get too rich. Yet by replacing arbitrary levies with taxes, western rulers managed to raise more money. As their economies grew, so did the tax base. Law-governed taxation proved to be a better fiscal technology than arbitrary seizure, for rulers and subjects alike.

A host of other innovations followed, extending and refining that fundamental right of property: laws of contract, patents, company law and so on. With time, these allowed a flourishing of many different types of economic enterprise—different in size, ownership and method of organisation. This organisational diversity is the hallmark of the advanced western economies. Here was yet another form of pluralism: just as governments competed, and producers or traders competed, so did different forms of economic organisation. The result was a social framework more effective than any other in history at fostering technological advance.

And so on and on?

Does rapid growth, once started, ever stop? Nuclear war, falling asteroids or man-made environmental catastrophe could all intervene. These risks aside, 250 years of rapid progress is not, in the historical scheme of things, a long period to extrapolate from.

One reason for doubting that growth will roar on and on is that the frontier of technology has moved much closer to the frontier of science; there are fewer wheelbarrows waiting to be invented. On the other hand, the progress of science today seems especially fruitful, technologically speaking: consider the Internet and the prospects for genetic engineering. Values, politics and institutions permitting, the stimulus of competition should flourish yet awhile. If it does, so may the flow of technological advance—and there is no reason why it should not be channelled, for the next 250 years as for the past 250, into improving human lives.





Millennium issue: POPULATION

Like herrings in a barrel

Dec 23rd 1999

From The Economist print edition

In 1,000 years, the human race has multiplied 20-fold. Today's 6 billion people may be 9 billion by 2050. Yet the increase has slowed; rich nations breed less

The power of population is so superior to the power of the earth to produce subsistence for man that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation...but should they fail in this war of extermination, sickly seasons, epidemic, pestilence and plague advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete, gigantic, inevitable famine stalks in the rear, and with one mighty blow levels the population with the food of the world.

WHEN Thomas Malthus, an English economist, in 1798 published his "Essay on the Principle of Population" , quoted above, he caused a sensation. At the time the world's population was close to 1 billion, having risen slowly and erratically from maybe 300m at the start of the millennium; which in turn was probably not much, if at all, more than it had been in 1AD. And today? Give or take the odd 100m of us, 6 billion.

When Malthus wrote, there was no widespread sense that numbers were running out of control. The general mood was upbeat. Indeed, most thinkers considered a growing population a good thing: more people, more hands at work, more output.

A century earlier, a pioneer statistician, Gregory King, had predicted that the human race would double from its then total of around 650m in about 600 years' time, and ventured boldly:

If the world should continue to [16052], it might then have 6,500m.

In fact it will do so in about 2006.

By Malthus's time, a few prophets of doom had begun to give forth. Giammaria Ortes, an Italian economist, wrote in 1790 that no one wanted to see humanity grow

not only beyond the number of persons that could breathe on the earth, but to such a number as could not be contained on all its surface, from lowest valley to highest mountain, crammed together like dried herrings in a barrel.

But Malthus's message was much more urgent than that. Some—probably unrepresentative—American figures gathered by Benjamin Franklin had persuaded him that, unless checked, most populations were likely to double every 25 years, increasing at a geometric rate (1,2,4,8,16 and so on), while food supplies would grow at only an arithmetic rate (1,2,3,4,5 and so on). Sooner or later the food was bound to run out.

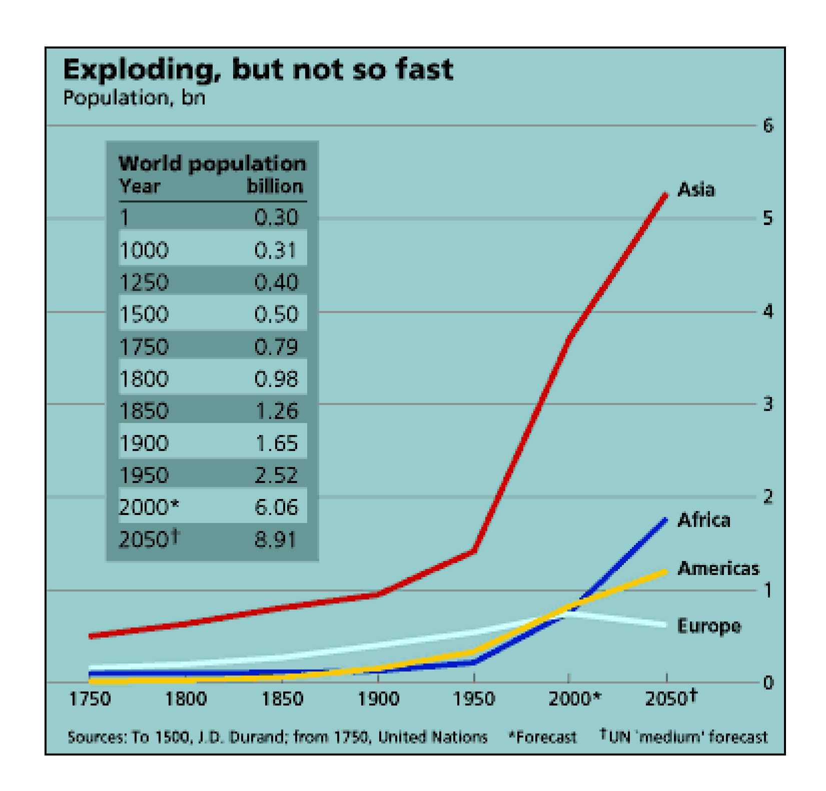
Mankind had a choice: either let matters take their course, thus inviting "positive" checks—wars, plagues and famines—to reduce numbers to sustainable levels; or adopt "preventative" checks to ensure fewer children, for example by bridling passion and delaying marriage. Malthus was not optimistic that enough people would

choose restraint. He himself tried to set an example by not marrying until he was 38 (and then had three children in quick succession).

Malthus was wrong in expecting populations to double every 25 years. But not far wrong: in the 200 years since he wrote, the time it takes mankind to double has shrunk from several centuries to 40 years. And he was clearly right to note that the earth's resources are finite, though he vastly underestimated man's ingenuity in utilising them more efficiently, and at making new inventions. Technology and innovation, speeded up by the industrial revolution, allowed food supplies to increase at a faster-than-arithmetical rate. Even during Malthus's lifetime, crop land was being expanded rapidly as forests were felled, and innovations such as crop rotation and selective breeding brought large increases in yields. These continue, through the "green revolution" of the 1950s to today's high-yielding, if unloved, genetically engineered crops.

What Malthus could not have predicted, since nothing like it had ever happened before and it was barely under way by his day, was something known now as the "demographic transition": the way societies alter as they get richer. First comes a decline in mortality, leading to a short population explosion; then, after an interval of variable length, a steep decline in the birth rate, which slows, halts or may even reverse the rise in numbers.

For most of human history, people had lots of children, of whom many died in infancy. If things were going well, and there were no serious wars, epidemics or famines, more would be born, more would survive longer, and populations would rise. From about 1000 to 1300, Europe enjoyed a spurt of economic growth. A lot of new land was taken into cultivation, and the number of cities multiplied. The population doubled or trebled.



World population

Year	billion
1	0.30
1000	0.31
1250	0.40
1500	0.50
1750	0.79
1800	0.98
1850	1.26
1900	1.65
1950	2.52
2000*	6.06
2050†	8.91

Enter, in 1347, via the Mediterranean, the Black Death. Within a few years this plague had traversed the continent. By 1400 Europe's population had shrunk by maybe 25m, about one-third. Plague reappeared periodically over the next three centuries, the last big wave rolling over north-western Europe in the later 17th century, soon after the Thirty Years War, which had already slashed Germany's population. In the New World, smallpox brought by Spanish *conquistadors* and European settlers in the 16th century killed maybe 10m-20m of the native populations. Not even the 20th century has escaped such scourges: the worldwide flu of 1918-19

is thought to have caused 25m-40m deaths, far more than the first world war; and since 1980 AIDS has killed some 12m people, so far.

In pre-industrial Europe, frequent food crises also served as periodic population checks. When bad harvests pushed up the cost of grain, more people died and, while the trouble lasted, couples had fewer children. Figures from Tuscany (not alone) in the 16th-18th centuries show grain prices and mortality closely correlated. But by the 19th century the days of famine in Europe were largely over, except in Ireland, where the potato blight of 1846-47 and its side-effects may have killed a sixth of the 8m-odd people.

The transition begins

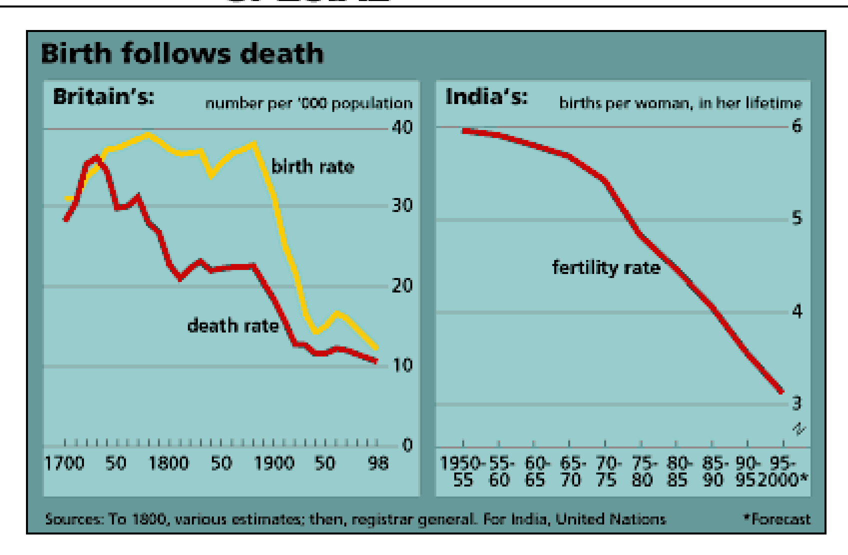
By the mid-19th century most of Europe was in the first stage of the demographic transition. Mortality had lessened, as wars, famines and epidemics had; local food shortages were rarer, thanks to better economic organisation and transport; public health, medical care (notably, midwifery) and the control of infectious diseases such as cholera and smallpox had improved. The population spurted, as Malthus had predicted. Between 1800 and 1900 Europe's population doubled, to over 400m, whereas that of Asia, further behind in the demographic transition, increased by less than 50%, to about 950m.

Europe by now was crowded, and most worthwhile land already under the plough. But there was space elsewhere. Thanks to a steady trickle of migration over the previous three centuries, North and South America by 1800 each held about 4m people of European extraction. From around 1850 that trickle became a flood. Over the next 100 years or so, some 50m Europeans quit their continent, most going to North America, others to South America and the Antipodes. At the peak of this wave of emigration, Europe was exporting about a third of the natural increase in its population.

But something else was happening there that would have taken Malthus by surprise: as people came to expect to live longer, and better, they started to have fewer children. They realised they no longer needed several babies just to ensure that two or three would survive. And as they moved from country to town, they also found that children were no longer an economic asset that could be set to work at an early age, but a liability to be fed, housed and (some of them) educated, for years. Worse, with too many children, a mother would find it hard to take and keep a job, to add to the family income. Nor were offspring any longer a guarantee against a destitute old age: in the new industrial society, they were likelier to go their own way.

Thanks to Europe's new-found restraint, in the past 100 years or so its population has risen only 80%, to 730m, and most countries' birth rate is now so low that numbers are static or falling. But their composition is very different from the past: better living standards, health and health care are multiplying old heads, even as the number of young ones shrinks.

In contrast, Asia's population over the same time has nearly quadrupled, to more than 3.6 billion. North America's too has grown almost as fast, but largely thanks to immigration. Africa's has multiplied 5 1/2 times, and Latin America's nearly sevenfold.



Why these differences? From around 1950, mortality in developing countries also began to fall, and much faster than it ever had in Europe. The know-how needed to avoid premature death, especially of small children, travelled so readily that life expectancy in many poor countries is now not far behind the rich world's. But the attitudes and values that persuade people to have fewer children are taking longer to adjust.

Yet adjust they do. In China, the world's most populous country, with over 1.2 billion people, and still relatively poor, the demographic transition is already almost complete; not only has mortality come down faster than in other countries with similar income levels, but in recent decades a sometimes brutal population policy (now being relaxed a little) has restricted couples to one or two children. India's population rushed ahead for longer, and has just reached 1 billion, despite attempts to slow it, including a period in the 1970s when the government promoted large-scale sterilisation. The UN's "medium-variant" forecast is that by 2050 India's headcount may be over 1.5 billion, slightly ahead of China's. Yet in India too fertility has fallen fast. Only in Africa is population growth still rampant, though slowed by AIDS, which in some countries is killing a large proportion of the young adults.

Does more mean worse?

Demographers like to dramatise this recent population growth by asking a spooky question. Of all the people who have ever lived, how many are alive today? The answer requires a lot of guesswork, except for the very recent past; but a fair estimate for the number of people born throughout human history is 80 billion-100 billion. With mankind now numbering 6 billion, the astonishing answer must be: 6-7%. The figures are even more spectacular if you count man-years lived rather than people, because life for early man was usually short: at birth, he could expect 20 years of it in 10000BC, only 27 as late as 1750AD, and 58 today. On that reckoning, those alive today account for one-sixth of the time that humans collectively have spent on earth.

Is all this rise in numbers necessarily a bad thing? Economists have disputed endlessly: does it promote economic growth, by expanding the workforce, or, if it happens too quickly, choke growth off? Their answers seem to boil down to an unhelpful "It all depends." But then governments' population policies are not guided solely by economics. Prussia's Frederick the Great made a sharp political point when he observed in the 18th century that "a country's wealth is the number of its men." Two centuries later, Mao Zedong insisted that "China's vast population should be viewed as a positive asset."

Of course, numbers are not the only measure. The United States, with its 275m people, has less than 5% of the planet's population, yet it dominates the other 95%. Still, in many rich countries the birth rate has now fallen

so low that the population is actually shrinking; and in some their governments see this as a problem. Their main fear may be that soon there will be too few young workers around to pay for older ones' pensions. But at the back of their minds there may also be the thought that, say, a Japan of 105m people in 2050 (the UN's medium forecast) might carry less clout than today's Japan of 125m.

Mankind had a choice: either let matters take their course, thus inviting "positive" checks—wars, plagues and famines—to reduce numbers to sustainable levels; or adopt "preventative" checks to ensure fewer children, for example by bridling passion and delaying marriage. Malthus was not optimistic that enough people would choose restraint. He himself tried to set an example by not marrying until he was 38 (and then had three children in quick succession). Mankind had a choice: either let matters take their course, thus inviting "positive" checks—wars, plagues and famines—to reduce numbers to sustainable levels; or adopt "preventative" checks to ensure fewer children, for example by bridling passion and delaying marriage. Malthus was not optimistic that enough people would choose restraint. He himself tried to set an example by not marrying until he was 38 (and then had three children in quick succession). Many say the globe is already overcrowded, risking environmental disasters such as global warming and pervasive pollution. Nonsense, say others: with careful management it could carry plenty more, say 10 billion. A few optimists, if that's the word, muse that, with a bit of squeezing and the astute use of technology, the figure might be several times that, maybe even 100 billion.

One thing is sure: even if from tomorrow every couple on earth practised Malthusian restraint and stopped at two children, the momentum built up by the huge population growth in developing countries since 1950 will keep numbers rising fast for decades to come; the UN's medium forecast for 2050 is 8.9 billion people. But, fingers crossed, soon thereafter even the poorest countries may have lost their enthusiasm for large families, while couples in some richer countries may—may—have rediscovered that two children are, and have, more fun than one. A century or so from now, if mankind survives that long, its number may have reached a new (and surely better) steady state.





Millennium issue: WORK

Toiling from there to here

Dec 23rd 1999

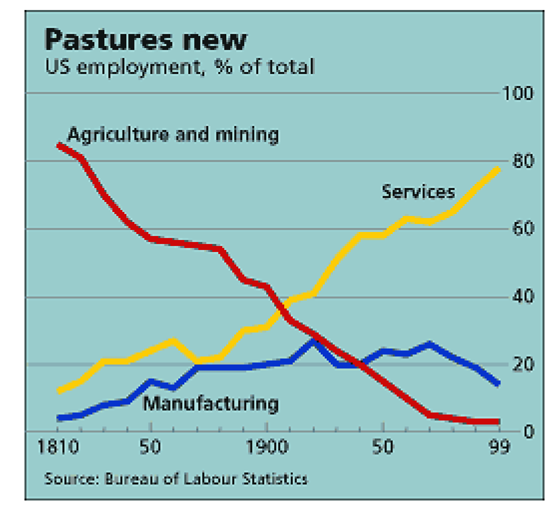
From The Economist print edition

Man's work has changed utterly: after a half-century of horrors, for the better

NOTHING in human life has changed more in ten centuries than the world of work. Most trades now practised in rich countries did not exist 250 years ago. Of those that did, only prostitution and beggary (and a few rural crafts like hill shepherding or farriery) are conducted as they used to be. If work makes the man, we are a new race.

The obvious symbol of that is the shift from farming, most dramatic in 19th-century Britain, but huge everywhere. Not that farm work is unchanged. For millennia, man guided the plough, drawn usually by oxen, then sowed, cut, stooked ("what's that?"), threshed and winnowed the corn by hand. By 1825, he had horse-drawn reapers, soon steam threshing machines and engines pulling a plough by cables across the field; now he drives tractors and giant combines, one man working where 20 or 30 did before.

Other trades mechanised faster and further. Yet mechanisation is not the biggest change, nor advances like the development of the typewriter (in 1867-73 by a Wisconsin man, C. Latham Scholes) or the silicon chip, that almost created trades of their own. The greatest change is that there is a "world of work", distinct from the home, at all.



In 1200, 1500, indeed 1700, for nearly all—the merchant, the craftsman, the employed "journeyman", the apprentice, the domestic servant—work was where the household was; soldiers and sailors were the odd men out. Then, around 1770—one or two even earlier—the factory was born; and with it a new world of mass wage employment.

Marx, for once, was right about this: the relationships of the past had been torn up. Where two or three, maybe 12 or 13, had worked together, 200 or 300, 2,000 or 3,000 did. The merchant by 1970 was a sales executive; the apprentice worked in the stores or the typing pool; the journeyman, instead of living in his master's household, as many had, drove to the assembly line and left it, forgotten, when the shift ended; the servant was dishing out in the works canteen. Though mechanised, farming was one of the few trades where old relationships survived.

The old world was not always better, often far worse. The typing pool or today's call centre may be misery, but at least the "apprentice" is allowed, and can afford, to go clubbing. And the 1990s are reinventing the past, as the assembly line slims and the consultancy of half-a-dozen people multiplies. But that past was indeed another country.

The household of work

In, say, 1600 the merchant, in any European town, lived literally "above the shop", or at least the stock, and with the staff. That is why old merchants' houses are so big: not because he had a big family or ideas, he

needed the warehouse space, on the ground floor and maybe the attics too; and space to house adult employees, apprentices and servants, besides his wife and the (often working) children. He fed them all, and clothed most. On a smaller scale, the butcher, baker and candlestick maker did likewise. A sizeable farm, at least in England, would house one or two employees (the family's own children perhaps being servants in a richer household). Better than today's or not, the working unit was bound by more than wages.

It offered far less liberty, however, than today's world of work. There were slaves in England till about 1200; and the "villein" owing days of labour—and much else—to his lord, notably at harvest-time, when he most needed them for himself, lasted beyond 1500 (as serfdom of this type did in France until 1789, Prussia till 1815, Austro-Hungary till 1848, Russia till 1861). The English apprentice was bound to his master for seven years. He was housed, fed, clothed, taught the job, but not paid: one indenture of 1459 promises the future fisherman 20 shillings (£1) after his years of service; another, from a weaver 250 years later, pledges two suits of clothes.

For the craftsman, life was better. Above all, his working hours were his own. For centuries Europe's textile trade was a mixture of capitalism and contracting-out. The "clothier" bought the wool, supplied it to the spinner, collected the spun yarn, took it to the weaver, collected the cloth, and so on. Many a rural family made much of its income spinning or weaving. Like any contractor, it was at risk, if trade fell off, or it fell out with the clothier. But it was its own master.

The road from there to here, via the factory system, involved, in all of Europe, some 50 years of hideous exploitation. England's "statute of artificers" in 1563 laid down at least 14 hours of work a day, minus up to 2 1/2 hours for meal breaks. Nearly 300 years later, factory-owners imposed much the same: 14 hours a day in Britain's 1820s cotton mills, 15 (even for children) in some 1840s German factories, up to 16 in the silk mills of Lyons in 1834. Factory owners and free-marketeers fought off the British "ten hours movement" of 1830 until the law forced their hand in 1847. Germany got a 12-hour limit in 1871.

The work itself was (often literally) killing. At best, steam-power and the division of labour—however immensely productive—had transferred skill from man to machine. John Ruskin lamented that "it is not the labour that is divided, but the men...into fragments, crumbs of life.You must either make a tool of the creature, or a man of him."

"Factory" discipline, a novelty to most workers, was fierce. Prussian coal-mine foremen could give 15 lashes to boys breaking the rules (though at least they rarely employed women underground, as British mines did). And when trade fell, the "hands" were turned off; the safety net of the old household system, the tie between master and servant, was gone. A textiles slump in 1847 halted 60% of the looms in Krefeld, Germany. Nor for 40 years did Europe (Germany, in fact) see any real public effort to handle unemployment, bar the dreaded English workhouse, or a well-meant French job-creation scheme in 1848 that instantly collapsed. Little wonder some women took to prostitution.

Yet the road was upward. Especially for women. Praising Scholes's invention, a London magazine in 1897 could still mock "the hundreds of old-fashioned firms where a writing-machine is absolutely tabooed". But vast new fields of employment were opening. Not too fast: in 1911, 39% of Britain's working women were still domestic servants.





Millennium issue: CITIES

The end of urban man? Care to bet?

Dec 23rd 1999

From The Economist print edition

Humanity for millennia has chosen to live in cities. They serve its needs

“MAN”, wrote Aristotle in roughly 330BC, “is by nature a city beast.” So, he could have added, are rats.

Not that he would have, because his “city” was the little city-state, the *polis*, of ancient Greece, usually fed by its own hinterland, filthy, mostly ill-built and unpaved, but (except for its slaves) a coherent, durable social unit. His adjective *politikon* really meant, for him, what it suggests to us: he was on about politics, not town-planning.

Yet today the comparison with rats looks apt. The Athens of Aristotle’s day was a monster, by that day’s standards, with 150,000 people, hinterland included; and it had been bigger. But even at its peak it was a village to today’s Athens of 3m people, traffic jams and fumes. And that in turn is nothing to some modern cities: “metro” Mexico city—the conurbation—holds around 18m people.

And today’s cities are ballooning. Bombay in 1960 was a jam-packed city of 4m people. A peninsula, a bit like Manhattan, surely it could take no more? It did: today’s metro Mumbai, bursting over its landward boundary, holds 18m. Rich cities have barely one person per room; Jakarta has three, Lagos six.

Other ills are just as visible. Most rich cities have cleared the smoke of the 19th century: London breathed its last pea-soup fog in 1954, the velvety soot on Manchester’s buildings has been scoured away. Not so in poor countries. Mexico city’s air is famously filthy, as is that of many Indian, Chinese, even Russian and East European cities.

Then there is the car. It pollutes, witness the smogs of Los Angeles or Chile’s Santiago. It strangles: by 1940 New York had 1m motor vehicles, in Manhattan averaging less than 5mph (8kph). Poor cities can now beat that: add the car and Cairo’s 10m people to streets fit for a tenth as many, and the car often goes slower than the people. Not to forget sewage and waste disposal, nor the inner-city decay as the richer rats flee to the suburbs. And so the litany goes on. The city is surely doomed, as Lewis Mumford, an American sociologist, foretold 60 years ago, and many others since.

But hold on. Sixty years? That’s a long time to spend dying, and in fact most cities have spent it doing the opposite. Not even rich countries—which could afford it—have seen mass desertion of their cities. For every Detroit left (temporarily, at that) to rot, there are umpteen city centres still full of willing citizens; look at the rents. In poor countries, 40 years ago, it was easy to foresee riot and bloodshed, as grim, already bursting, cities swelled. It has seldom happened. Is Lagos a coherent, durable social unit? Is Calcutta? Maybe not. But where is the revolution? Overcrowded rats turn and rend each other. Humans might—but they haven’t.

The usefulness of cities

To know why not, ask why cities grew. Europe’s, over the centuries, reply: they served ends that could not have been served otherwise. In 999, as when Aristotle wrote, man was not, in practice, a city beast: most people



lived in the countryside. Yet not by choice. Today, almost half of humanity lives in towns. And it does so because it wants to; or, at least, chooses the lesser of two evils.

Man has always lived in groups: it makes life safer and easier (and more fun). Some of Europe's towns grew round the stronghold of a local lord. Most, including these, developed as buying and selling did; trade needs a market, and markets need a certain mass. They are also self-reinforcing; a good one wins more business, a bad one, with few buyers, or the wrong goods or prices, dies.

All successful towns met this economic need—or others. The English "villein" of 1100 could hope to escape the tie to his land and lord if he decamped to town. For any peasant anywhere, town was the one place where he might make his fortune, like Dick Whittington, a real person who did "turn again", became lord mayor of London and died in 1423. When harvests failed, the nearby town offered hope of survival.

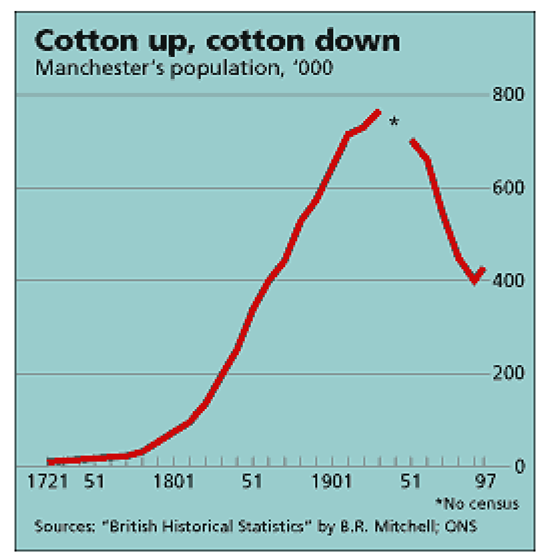
Hark, hark, the dogs do bark, the beggars are come to town

is not just a nursery rhyme, it is social history. Centuries later, country people all over Europe flocked to towns for work in the new factories. The same motivations drive the ex-peasants of poor countries to town today.

Above all, though, the towns served their own citizens. Provided they were in turn served by them. Geography—rich soil, a safe harbour or navigable river, ample fresh water, easy defence, later minerals like coal—was the start of many a town. But men made the difference. Let the river silt up, as Bruges did around 1500, and decline was near.

Bruges—whose Buers family, on the Buerseplaats, gave us the bourse, the merchants' exchange—was in fact already declining. It had been a huge cloth market. Foreign traders crowded it, ships came from the Mediterranean as early as 1300. Later the dukes of Burgundy set up there. Here were courtly splendour, wealth, richly endowed religious houses—and somehow enterprise got lost. Antwerp took the trade. Not just was it nearer the growing supply of cheap English cloth, but it chose to compete: Bruges tried to keep the cheap cloth out, Antwerp bought it unfinished, and finished it for resale.

Rather the same happened in England's textile industry. Wool came from flocks in the Cotswolds, west of Oxford, or East Anglia (whose vast churches witness still to the wealth it brought). Yet it was Yorkshire whose weavers, later, created new cities; because it had enterprise and its rivals had less. Likewise it was a climate of enterprise—and existing mechanical skills—not of the damp air dear to old geography books, that made Manchester the cotton capital of the world.



Mischance could defeat the best-laid plans. Antwerp bought its cloth, and Portuguese spices, with German silver; then 16th-century Spaniards found South American silver, and the spice/silver trade moved to Lisbon. Lübeck lived by trans-shipping Baltic goods to cross Denmark—till traders learned to sail round that country. Yet Florence showed how a city could live on its wits. Its hinterland is not rich; it became so. It is not a port; yet its merchants built a Europe-wide trade. Its river Arno gave it plenty of water, essential for making cloth, but no more than some other cities; yet it beat most as a maker and market of cloth. Above all, it virtually invented banking, and for 250 years led Europe at it. That was no accident. It was the

result of a community, men learning from and competing with each other, just like London's Elizabethan theatre or Detroit's car makers; in sum, a city at work.

Venice built its medieval greatness on trade. Rome sold the faith, drawing in contributions to the papacy, and pilgrims in sometimes embarrassing but always enriching numbers. Since 1850, Paris—though also a great industrial centre, housing, not least, Gustave Eiffel's ironworks—has sold pleasure, just as Las Vegas sells gambling.

All cities, of course, sold and sell sex. This was a huge trade in the 19th century, though seldom as glamorously practised as by the *grandes horizontales* of 19th-century Paris or 16th- or 17th-century Rome and Venice. Amsterdam has records of a licensed, well-organised red-light district 350 years ago.

The sex trade, then and now, is typically an urban one, and it witnesses to something else that cities sell: a degree both of tolerance and of anonymity. Tolerance was limited, as many a pogrom in European cities testifies of the past, or sectarian riots in South Asian or Indonesian cities do today. Yet the Jewish community in its 16th-century ghetto, chosen or imposed, was far safer (and big enough to provide rabbis and synagogues) than would the lonely rural Jew have been, or was the lonely Albanian or Serb in 1999 Kosovo. For all its faults, the city serves.

It has served education well, if only because children had to be assembled in one place, and older students to be housed. Not until the 19th-century English boarding-school was any secondary school set up except in a town, and few then: Westminster school in central London and Galatasaray in Istanbul are far more typical. No university, till very lately, was plonked down in virgin countryside. Cities did not always like the results. Medieval Paris often saw conflict between lay and clerical authority over miscreant students. Oxford and Cambridge are still to outgrow the mutual dislike of town and gown. But the urban university, in a town and eager to be of it, is the pattern.

Cities served politics too. A few housed central government (hence the rise of Berlin and later, in part, thanks to public procurement, of its great electrical industry); many challenged it. City councils often disputed royal, noble or churchly power. They were rarely democratic. Many cities had a ruling elite, which even the new rich found hard to join: Venice's patricians admitted no fresh blood from 1381 to 1646. And their politics could be rough; in Italian cities like Florence, often bloody. Yet cities were a countervailing force, notably in the Low Countries, 40-50% urbanised by 1600, where they coexisted uneasily with the local lord; and, till about 1550, in Germany, recognising imperial authority, but in practice governing themselves.

Many a ruler had reason to rue the power of cities, or their mobs. In Castile in 1520-21, commoners claimed rights still denied in Spain 450 years later. In England's 1640s civil war, London was a pillar of Parliament against the king. In the great killing of Protestants in 1572, the Paris mob outran its rulers; in 1789, far more radical than the countryside, it overthrew them; it was crushed only by ruthless force in 1848 and 1871. Russia's Bolshevik revolution was in fact a coup backed by the urban working class. For good or ill, the city was always an agent of change.

The price

The human price of city growth has been huge, of course. Witness Odon de Deuil, on Constantinople in the 1140s:

Filthy, stinking...perpetual darkness...richer than anywhere else, and wickeder.

Or Alexis de Tocqueville in 1835 on Manchester, the first industrial city, suddenly swollen by its cotton mills, a city of "half-daylight", as he put it, smothered by black smoke:

Heaps of dung, building rubble...one-storey houses whose ill-fitting planks and broken windows suggest a last refuge between poverty and death...yet below some a row of cellars, 12 to 15 human beings crowded into each repulsive hole... [Yet] from this foul drain, the greatest stream of human industry flows out to fertilise the whole world, from this filthy sewer pure gold flows.

Could things have been otherwise? For all their filth, medieval cities were not chaos. They housed real communities, each trade run by its own guild, sometimes concentrated in its own district. They were small, to today's eyes. Constantinople had perhaps 750,000 people around 1000, but Florence not quite 100,000 in 1300 (and half as many in 1400, after the Black Death). They grew slowly. Some were planned: Salisbury was laid out as a new town before 1250; a pope was driving straight streets through Rome 400 years before Haussmann did it in 1860s Paris.

The explosion began in the 18th century: Berlin's inhabitants quadrupled from 1700 to 1800, if only to 170,000 (with 950,000, London was Europe's largest city by far in 1800). Paris grew 3 1/2-fold, to 2m, from 1800 to 1870; Chicago 12-fold, to 3 1/2m, from 1870 to 1930. Planners did their best, with some success in the New World: Philadelphia was designed, on an elegant grid, in 1681-82, Washington, on a grid, plus diagonal avenues, in 1791-92. Space shaped architecture. Cheap land gave sites for the detached houses of 19th-century Chicago, just as dear land was producing the tall, multi-family, bourgeois courtyard blocks of Paris. Many cities quite early had rules on heights or plot sizes: hence the narrow one-family houses of Amsterdam, or, later, the backward-stretching tenements of Berlin or New York. But sheer numbers and market forces often defeated good intentions. The half-acre plots from which early Philadelphians were to feed themselves were built over; Frank Lloyd Wright's one-acre dreams of the 1930s never left the drawing-board. The "garden city" was a fine idea; with rare exceptions, it just hasn't happened.

In contrast, gold did indeed flow from putrid Manchester (until its cotton industry shrank after 1950, and the city with it). And note: while the gold remains, the filth has gone (if only to the exploding cities of Asia). One could blench 30 years ago at Europe's megalopolis of 56m people, stretching from the Ruhr up to the Amsterdam-Rotterdam "Randstad", down to Charleroi and Lille, and over to south-east England. It now has 59m, richer, people—but far cleaner cities.

Yet if pollution, traffic and the suburban shopping mall cannot kill the city, will teleworking and the net? Will downtowns like Houston's be abandoned to decay, their office towers unpeopled as the pyramids, leaving suburbia to rule? Futurologists love to tell us so. Let them tell the birds.

Millennium issue: RIGHTS

Democracy? Freedom? Justice? Law? What’s all this?

Dec 23rd 1999

From The Economist print edition



The rights that western man now takes for granted are not just recently won but far from natural. So are the justice systems that ensure them

IT’S a weird idea. A day is fixed. The citizenry, every Tom, Kim and Mary of it, if they so choose, troops along, marks a piece of paper and puts it in a box. The papers are counted, and, lo, if the count so says, the holders of the supreme powers of the state step down. Men with the power to tax or not tax, to spend this way but not that, to permit or outlaw, to make war or peace, to condemn millions to death in a nuclear holocaust: they quietly hand over all these powers to bitter rivals whose policies, character and competence they have spent months decrying. Few things more astounding than electoral democracy have been invented.

No less astounding is that parts of the world can take it for granted, and the entire planet claims to practise it. Even China, the one state ruled very much as it was 800 years ago, by a self-perpetuating central elite, calls itself a “people’s republic” and holds “elections”. And this is just one of what are called western values—the sovereignty of the people and accountability of its leaders, the rights of the individual (against both, if need be), the rule of law to ensure equal justice for all—that have spread worldwide.

To call the ideas “western” is a big over-claim. Ancient Athens indeed fathered the word “democracy” (while excluding women and slaves from it), but quite possibly not the idea. And certainly you can be Maori, Korean, Hindu, Arab or Yoruba and need no westerner to tell you that you’d sooner think and decide for yourself than have some ruler do it for you. Still, the ideas have spread from the West. Yet how recent they are there; the Anglo-Saxon peasant of 999 waking today would be as amazed by them as the Yoruba one in Nigeria.

Not that either man would be quite as amazed as we may now think. Pre-Norman Britain had versions of local democracy that were later lost. Yoruba chiefs, long before British colonial officials (let alone ballot boxes) turned up, were hedged in by the elders of what was never their own, personal, fief.



Nor was belief in the absolute authority of kings any age-old tradition in Europe. The separation of church from state, now so often contrasted, as typically western, with the Islamic notion of the state, is in fact barely two centuries old. It was commonplace, until 1600, to see the king as sharing his authority with the other estates—in practice, the elite—of the realm; and all of them bound by Christian morality, without which God would certainly punish them. That last thought was widened by both Protestant and Catholic radicals into a claim that the good Christian people could justifiably overthrow a wicked (or "idolatrous"/"heretical") ruler. Even Machiavelli, theoretician of "The Prince", later in life came to believe that, in a city-state, without deep social inequalities, republican government was best.

From divine right to democracy

Only in 1576 did Jean Bodin, a French political thinker, assure Europe that the king, and he alone, was boss. Yes, and by divine right, went a rapid extension of this theory: appointed by God, guided by God (however nasty the resultant kingly actions) and with absolute power (not least over the local church). The future James I of England, "the wisest fool in Christendom", already king of Scotland, gleefully embraced this notion—thereby ensuring that his still more foolish son, Charles I, lost his head to an axe.

That execution, in 1649, at Parliament's order, followed in 1688 by the ouster of the even stupider James II, was the death-blow of absolute monarchy in Britain. But not elsewhere. Nor was it any triumph of democracy: in 1653 the new boss, Oliver Cromwell, sent Parliament (such as it was) packing, nominated his own poodle body, and when the poodles yapped kicked them out too. Soon a king was back; and quite soon the notion of responsible monarchy was common coin in Britain and, later, its empire.

Democracy, and the much wider notion of "the rights of man", had to wait till the two great revolutions of the late 18th century. Even then, the concept was limited, in practice. For the first time, in America, a (would-be) state, not just enlightened thinkers, declared all men equal—but excluded slaves and, for even longer, women from a say in political affairs, just like ancient Athens. France's revolutionaries went much further socially, and in populist verbiage. They also drenched their new freedom in blood; not only that of aristocrats but of priests and, in the Vendée massacres, peasants who rashly disagreed with them. Within 15 years, France had an emperor; and its women had to wait even longer to vote than American ones.

And Britain, "mother of parliaments"? As its reform bill of 1832 cautiously widened the franchise a little, conservatives thundered against "arrant democracy". And its own parliament long remained packed with the well-bred and well-off; so packed that when a newly arrived Labour member asked an older hand where he could relieve himself, the latter, a famous wit, supposedly replied, "There's a door along there marked 'Gentlemen'—but don't let that put you off." The story is probably fiction; its spirit is not.

Arguably, the real key to worldwide democracy lies in the less dramatic revolutionary ferments in Europe of 1830 and 1848. On the surface, they failed, as did Britain's Chartist movement between those years. But they symbolised and inspired what was to become the irresistible spread of progressive thinking; and warned the new, increasingly bourgeois, elite of Europe that what it had grabbed, others below it wanted too. Even the Russian tsar got round, in 1861, to freeing his country's serfs.

And so from Euro-America to the world; notably, through its empires. Already, Latin America, freeing itself from empire, had put on the new liberal clothes. In Africa and Asia, the colonial rulers never practised democracy, though Britain made ever-so-timid, belated steps towards it in India. But they carried their self-subversive ideas; and in time thousands of colonial students were to see these at work in the imperial capitals themselves.

When the great retreat from empire came, in 1945-75, all the colonial powers—even Portugal and Belgium—left behind at least a lip-service structure of democracy; Britain and France more than that. The Americans meanwhile had shoved the idea down Japanese throats. Whether these structures were well thought-out, and what, where, then became of them, is another, more complex and mainly gloomy story.

The right to law

And what about the justice system that upholds all political and other rights, and much else besides?

"The first thing we do, let's kill all the lawyers," says Dick the butcher to Cade the tailor in one of Shakespeare's plays, as the two fantasise about a perfect England. Cade loves the idea. Many today might love it even more. At the end of the millennium, some societies feel weighed down by a growing burden of laws and lawyers. How tempting to hark back, like Dick, to a halcyon time when benign rulers ruled with inborn, natural justice, when a man's word was his bond, tradition and custom were respected, and disagreements were resolved with simple common sense. Too bad that it never existed.

Life for most people in 999, and long after, was rough. Trade, investment and innovation were to alter that. But the transformation could not have happened without the framework of law that first secured property rights and personal safety, and later made possible transactions between strangers continents apart, with the assurance that the deal would be fulfilled, or else. Nor would the invention of any amount of rights count long for much, without means of ensuring them. Small or primitive groups can function with simple sets of rules and informal understandings; not so today's highly urbanised society and global economy.

Today's legal systems have had a slow and complex evolution. Most contemporary law is derived from the two great legal traditions of Western Europe, the civil law of continental Europe and the common law of England. The two have spread to nearly every other region of the world, usually imposed through colonialism, but sometimes, as in Japan, Korea and China, adopted in conscious imitation of Europe. These legal transplants, even when imposed by outsiders, incorporated some local customary rules, and they have diverged from their European models. But their ancestry can still be discerned.

Modern European law emerged from a deliberate resurrection of Roman law. For centuries after the collapse of the western Roman empire, the great body of its law lay largely forgotten. It survived in part in the church, and in bastardised forms in areas of southern France and Italy. Elsewhere, the cruder customary law of the German tribes took its place. The uniformity of the empire gave way to a patchwork of legal authorities, as local princes or nobles applied local rules in a sporadic and often capricious way.

As political order became more firmly established, these customary rules were ill-suited to cope with the resultant growth in trade, the expansion of towns and the administration of greater swathes of territory. Responding to this need, groups of scholars in the late 11th century rediscovered the Corpus Juris Civilis, a huge compilation and refinement of Roman law made five centuries earlier at the direction of the Byzantine emperor Justinian I.



Centred on the University of Bologna, in northern Italy, generations of these scholars produced a vast literature commenting on and expanding Roman civil law. Students from all over Europe flocked to Bologna to learn the new law first-hand, and returned to their own countries to set up law faculties in the newborn universities. Meanwhile, guilds and merchants' associations were developing their own rules and courts to handle commercial agreements and resolve disputes. Increasingly, public officials, local judges, and merchants' courts, when they needed an appropriate rule for novel situations, turned to the university scholars.

Though often applied in different ways or adapted to local conditions, the new rules thus spread throughout Europe, comprising what became known as the *jus commune*, a common stock of procedures and concepts which gave the law of mainland Europe a strong sense of unity. The rise of the nation state eroded this unity, but scholars continued to play a central role in the law's development, maintaining a link with the Roman past in great national codifications of laws, such as the Code Napoleon of 1804, and the German Civil Code, which took nearly 20 years to compile, and went into effect on the first day of the present century. Such national codes were in turn exported to many countries outside Europe.

Votes for all, belatedly

	Date all adult* men granted the right to vote in national elections	Date women gained equal voting rights with men
New Zealand	1879	1893
Australia†	1901	1902
Norway	1898	1915
Russia	1917	1917
Germany	1867	1918
Denmark	1920	1918
Canada	1920	1918‡
Netherlands	1917	1919
United States	1870§	1920
Sweden	1909	1921
Britain	1918	1928
Spain	1869**	1931
Brazil	1889	1932
Turkey	1924	1934
Phillippines	1936	1937
France	1848	1944
Italy	1919††	1946
Japan	1925	1946
Venezuela	1946∆	1947
Argentina	1912	1947
Belgium	1920	1948
India	1950	1950
Mexico	1909	1953
Colombia	1853	1957
Iran	1906	1963
Switzerland	1848	1971
South Africa◊	1994	1994

*Aged 25-plus †Aboriginals enfranchised 1967 ‡Women gained equal (but property-restricted in two provinces) rights in 1918. Full adult franchise 1920 §Vote extended to blacks **Abolished after 1874 coup, restored 1890 ††1912 for men aged 30-plus ∆1858 for lower-tier bodies; national ones were indirectly elected till 1946 ◊Full adult franchise for whites only, 1931. The few black and Indian voters lost their rights in 1936 and 1946 respectively

Sources: "Democracy and Elections", by Richard S. Katz, Oxford; *The Economist*

England goes its own way

England took a completely different path. The Norman conquest of 1066 had given it a centralised government and administration long before continental nation-states had begun to form. This made England resistant to the legal revolution that later swept across the rest of Europe.

The Normans found a system of courts in being, and not ones that always toadied to the mighty. What customary service did the villein John, a semi-free peasant, owe to the lord of the manor? A jury of peasants gathered at the manorial court would decide. Was Robert a villein or the free owner of the land he'd been evicted from? A villein, said Simon, the powerful landowner who now held it, in a recorded case of 1202. He brought a string of witnesses to prove his case. Bribed, said Robert—and the court took his side.

All this, though, was ad hoc, most of it concerned with determining matters of fact. In time, rules created case-by-case by the king's counsellors, and then by a new set of officials, the judges, replaced the jumble of local rules and courts. The result was England's common law.

Roman-law teachings from the continent did not impress English judges. They preferred to apply royal decrees and the decisions of their predecessors, adapting these to novel cases through reasoning by analogy rather than by applying abstract rules. Early in the 19th century Jeremy Bentham, a utilitarian philosopher, argued that England too should codify its law. Its politicians and lawyers thought otherwise: English law, like its offspring in America, remained an ad hoc mixture of statute and precedent.




New law, old purpose

Today the volume of law has swollen hugely, as legislatures, ever faster, pump out new laws and regulations. This new law often varies greatly from country to country, even when it is meant to handle similar problems. Yet the law is also being pulled towards cross-border consistency by the growth in trade, communications and travel; most international transactions are now governed by English or American law.

Differences between the civil and common-law traditions too have been eroded, as they borrow from each other. Civil-law courts pay more respect than in the past to precedent, while in recent decades common-law countries such as the United States have enacted uniform legal codes.

And law everywhere shares its old purpose: to free life from arbitrary, or merely random, action and decision, and provide redress against them. That can mean conviction of burglars, recompense for injury, protection from fraudsters—or from governments, witness the growing use of judicial review to challenge official action in those very countries where lawyer is becoming a rude, if well-rewarded, word.

In many poor countries (and not so poor ones, like Latin America) the issue is not too much law or too rich lawyers, but too little access to law, let alone rule by it. The institutions of law exist almost everywhere. Yet much of the globe remains literally lawless. For billions, lawyers, binding contracts and courts to enforce them remain out of reach. Property rights and civil rights are the preserve of a small elite, or even pure fiction. At best, civil law is often what a corrupt judge says it is, and crime is what such judges say poor men have done but rich ones not. And the biggest threat to life and liberty is often the very government that poses as the guardian of both. Remember this the next time someone tries to raise a chuckle by quoting the line: "Let's kill all the lawyers."





Millennium issue: RIGHTS

Merit rules, OK?

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From The Economist print edition



Passing-out (and upwards) day at France's Ecole Polytechnique

HE HAD waited years. Yet hardly was Christopher Musgrave in the lucrative post of clerk in ordinary to the Privy Council than he asked, and got, royal permission "to resign it to his nephew". So says his memorial in the church at Edenhall, site of his now vanished family seat in northern England. And, it adds proudly, "in the whole course of his life, he was not less mindful of any of his relatives when it was in his power to serve them". Such was public appointment in the Britain of the early 1700s, under Queen Anne.

She died. The habit did not. Hilaire Belloc was not wholly joking when in 1907 he wrote of Lord Lundy, whose kin

... had intended you to be

the next prime minister but three,

but who was so inept that

... my language fails.

Go out and govern New South Wales!

Nor was this true only of monarchical, class-ridden Britain. In Musgrave's day the Dutch republic was famous for the venality and nepotism of its public life. Much of the world still is: nepotism is natural.

Meritocracy is not. Today's path to public service would amaze most of our ancestors. In France around 1700, some 30% of the royal revenues came from the sale of public offices (including the rental: in 1604, a notable finance minister, the Marquis de Béthune, had made public office hereditary—pay the state, each year, one-sixth of what you originally bought the post for, and you could hand it on to your heir). But in Europe it was Napoleon's France that led the way to a better world, with competitive examinations and the *grandes écoles*

whose hyperpowered alumni have run the state ever since. China's Song emperors had got there 750 years earlier.

And a good thing too, who could doubt it? Only a cynic would note that it was Britain, whose landed aristocracy held sway well into the 19th century, that was to build up an empire grander even than the earlier ones of title-ridden Spain or, yes, those venal Dutch; whereas China was to be savaged by foreign powers, France, under Napoleon and later, to surrender in three of its four major wars.

Still, meritocracy is plainly fairer than aristocracy, is it not? Agreed. Not that, in itself, it has anything in particular to do with democracy. Our cynic might add that "aristocracy", in its original Greek, meant rule not by landed nobs, but by "the best"; the two, in the nobs' eyes, being manifestly synonymous. While "meritocracy" means rule by those who, especially in their own eyes, manifestly best deserve to rule. Quite a different matter.



Millennium issue: WOMEN

A world fit for women

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It took most of the past ten centuries. Here's why

A woman is a worthy thing,
they do the wash and do the wringe.
'Lullay, lullay,' she doth thee singe.
And yet she hath but care and woe.

A woman is a worthy wight,
she serveth a man both daye and night.
Thereto she putteth all her might.
And yet she hath but care and woe.

AND that is from a song whose writer, unlike many at the time (the early 1500s), was eager "to preise women wher that I go". But maybe his limited notion of the praiseworthy woman applied only to the humble housewife? Here, after all, is well-off Margery Paston, some 75 years earlier, writing to her husband John in London to procure, yes, a pound of almonds and a yard of broadcloth, but also "some crossbows...and two or three pole-axes" to conduct a property dispute. Who's wearing the trousers now?

Maybe, but what about John's teenage sister? Young Scrope wants to marry her. She's ready, if the money is right, but it's up to John (their father is dead) to decide. Meanwhile, she's fallen out with mamma, and—a female cousin writes to John—

she hath since Easter [this is June] been beaten once in the week or twice, sometimes twice on one day, and her head broken in two or three places.

Thus could a young woman be used, in a well-off, educated family, in 1449.

It could have been worse. English gentry of the day readily affianced their under-age daughters (and "age" was only 12) as, in effect, part of a property merger. Or indeed put them through a marriage ceremony: one such, in about 1200, was married at the age of four, twice widowed, and married a third time—for 300 marks, cash down —at eleven.

So what's old, one might ask? Peter Bruce, an adventurer serving the tsar, records Russian matchmaking in the early 1700s: notably "an inventory of what they propose to give with the damsel" which is hawked around, and, if it finds favour, an inspection of her "stark naked, to shew if there be any personal defect" by women sent by the might-be groom; the two young people meeting at last on their wedding day. In grand English families, the use of women as commodities went on, thinly disguised, until about 1900; in parts of the world, it still does. And child marriage? It lasted in England until nearly 1600; and not till the 1920s did British rulers dare to outlaw it in India—to no great effect.

As for the different rules for men's and women's sexual behaviour, Christine de Pisan, writing around 1400 in Paris, warns the inhabitants of her "City of Women" that men will accuse them of "so many vices in everything", while readily using "all kinds of tricks to catch you, just as one lays traps for wild animals". And "if a woman falls into your snares", an anonymous Englishwoman castigates men 300 years later,

so cruel and unjust are you, it is impossible she should ever retrieve her character; but you can find an hundred excuses for the crimes of your own sex—slips, heat of young blood, or the like.

She could have written it in 1900, or in many societies even now. Nor was it only her character that a woman put at risk. The errant Turkish wife in 1700, according to Bruce again,

is mounted on an ass, with her face toward the tail, carried through the town and then sold for a slave.

And she could count herself lucky with that, in one or two fiercely Islamic countries today; just as there are, in 1999 as in 1700 or 1400, Asian (nay, Sicilian) men who, if a sister tarnishes the family honour, restore it by murdering her.

Man has been blaming woman for his own misdeeds since Adam. "Fallen women!" said a 19th-century British reformer; "You mean knocked-down women." She was right, but the notion had crossed few male minds. In contrast, the idea of woman as the seductive leader-astray had long been widespread. And not only in the Christian world, with its distrust of sex. Islam does not share that distrust; Arab poets were earlier than Christians to sing of their loved ones. Yet the idea of woman as snare was as strong, and is now stronger, in Islamic societies.

Man has been blaming woman for his own misdeeds since Adam

Both cultures reacted in much the same way. For men: a wife (up to four, for Muslims), mistresses, slaves and prostitutes. For women: virginity till marriage, chastity after. Hence many German cities, until the Reformation, had a licensed brothel, in theory for unmarried men only, to keep the city's chaste wives chaste. The new Lutheran leaders closed Augsburg's council-run brothel in 1532, and then began a blitz on sexual morality—in which, guess what, women were the targets, being quizzed about their sexual history and punished harder than men.



And the virtuous wife? Christians and Muslims agreed on her duty. "Absolute obedience to her husband", wrote al-Ghazali, a Sufi sage, 900 years ago; love, patience and obedience, wrote an elderly (and truly tender) Parisian to his new 15-year-old wife 300 years later. And to what end? The two men agree. "Marriage frees the man from looking after the home...cooking, sweeping, cleaning pans," to work, study and attend to religion, writes the Muslim. And the Parisian: "Outside affairs are men's business," so when the husband gets home, let him have

his shoes taken off before a warm fire, feet washed, fresh stockings...good food and drink...white sheets...and privities about which I am silent.

Not to add looking after the children. What man ever disagreed? How many, now, ask if their wife has nothing deeper to think of?

An inferior species?

Why? Because to both sexes it seemed natural. Medieval man did not expect women to think much at all. "Deceit, weeping and spinning" were their traditional skills, in Chaucer's England, "children, kitchen and church" the later German notion of their business. After all, if God had meant Eve to be Adam's equal, He'd have made her from our first father's head, not a rib, would He not? (To which Peter Lombard, a 12th-century theologian, replied that He didn't make her from Adam's foot, as a slave, either.)

Boccaccio has even one of the bright, well-born young women recounting his "Decameron" tell the others that "men are women's head—we can't get much done except under their direction." John Colville, Churchill's private secretary, 600 years later, told his diary that "it is a waste of time to talk to most women on serious subjects. Sex, the Arts and the Abstract seem to me the only topics." It was nonsense (as other entries) show he knew; he could have looked back to Elizabeth I, and before he published his thoughts Britain had a woman prime minister. Yet even Elizabeth proclaimed her own "heart and stomach of a king" and Margaret Thatcher was famously "the only man in the cabinet". Old habits of thought and vocabulary die hard.

Reality and prejudice for centuries fed each other

And with bad reason. These were not just habits. Reality and prejudice for centuries fed each other. Just as criminalising prostitution created criminals, so laws based on the notion that women could not handle money ensured that many did not: until the 19th century in England (the rest of Europe was slightly wiser) a wife's property was in law her husband's. Women headed households: 15% of those in 1420s Florence, and early death long ensured the like elsewhere. A few—widows, often—were rich in their own right; England had some notable peeresses like this. Women did farm work, though their men owned or rented the land. Wives ran shops, or helped husbands in business, famously to run inns. When Augsburg's council shut its brothel, many enterprising women set up alternatives. But at any level of society these were a small minority.

That was notably so in education. Until 1500, this mostly meant the church; which, very largely, meant for men. There were educated, indeed learned, nuns, such as Heloise or Hildegard of Bingen. A French book of hours from the 1540s shows a woman teaching three men to read. But even when schools spread, they were not for girls. Henry VI set one up at Eton in 1441 for "70 poor schollers". All were boys (as are the 1,200 rich Etonians today). Education was rare: why waste it on girls?—an attitude that much of Britain's elite stuck to for the next 450 years. Women could not think (by male standards, on male topics), any man knew that. At times he was right: they had not been given the raw materials or mechanisms to think with.

Escaping the spiral

Yet women have escaped this spiral of deprivation. Not that equality is near, even in the West, let alone in those Islamic states which—ie, whose men—have decided to put women back into the *chador* or *burqa* whether they like it (as some do) or not. In American academe, feminist discourse reaches for ever-higher heights of obscurity; down in the real world, where people merely talk, many young Americans are offered the slap-up-ma-bitch model of inter-sex relations (and the wham-bam-thank-you-mam notion of sex). Yet real change has happened. Women can choose for themselves as never before. How was it done?

Painfully, and recently; thanks to better hygiene, medicine, contraception and—very recently—electronics; to the Enlightenment, the Victorian conscience, education and, yes, feminist discourse and action.

Men helped little, till they were shouted at or shocked. Less natural absentees from that list are the vote and the industrial revolution. The vote's absence is easily explained: though macho but egalitarian New Zealand led the way in 1893, few countries let women vote till after the first world war. The United States, having in 1776 declared all men created equal, did not include women (as 1840s feminists lamented) until 1920; France, proponent in 1789 of equality and fraternity, forgot both till 1944. Nor, when won, did the vote do much: women's issues have barely figured in any national election anywhere.

Yet surely the brute power of economics, sucking women into 19th-century labour forces, must have played its part? That is often said, but it is disputable. Women indeed found new roles, and often alongside men: underground, pulling coal-tubs, for instance, by a chain between their legs ("it's harder when we're in the family way," one told a British inquiry). And women were active in Britain's embryo trade unions and radical politics in the 1820s-1840s. Yet they mostly then dropped out, and what had it got them?

The vote? No, and not even male radicals felt sure they should have it. Jobs and wages, yes, but what jobs and wages? Mainly unskilled work (women did not get apprenticeships) in textile mills, say, or in back-street sweatshops, or as outworkers; and nearly always at low wages. It was widely assumed that men were supporting a household, women merely adding to its income, so men should be paid more; and men had no interest in upsetting this (often false) belief. Women would in fact work for less, so less they got: in one 1840s London parish, on average, 45% of a male labourer's pay for single women, 65% for widows with children.

This was an old tradition. Women on 15th-century French farms were paid half what men were. And it lasted. In the 1960s—yes, 1960s—even in clerical work women in Europe got only 60-70% of male earnings. Only recently has that figure risen, thanks partly to law, but more to automation and electronics, which have devalued brawn in favour of brains, or at least agile fingers.

The biggest change came, a bit sooner, from elsewhere: better health. Until about 1900, death in childbed was a real risk for a woman—even rich ones, in rich countries—and the death of some of her children a near-certainty. When that ceased to be so, repeated child-bearing was no longer necessary. And it could be prevented. Both marriage and sex took a new form. So did women's idea of themselves, their roles and their possibilities. Add "the pill" and you have one of the great liberations of history.

Yet not all was a side-effect of progress. Women had to fight, often stridently, at times dismaying other women and always irritating men. Take Britain as a case. Today's men jeer at "feminazis"; civilised Horace Walpole thought Mary Wollstonecraft "a hyena in petticoats". She died of puerperal fever, having given birth to the future Mary Shelley; her 1792 "Vindication of the Rights of Women" is one of the great (if hard-to-read) texts of women's fight for equal rights.

Women had to fight, often stridently, at times dismaying other women and always irritating men

She reflected the Enlightenment. Yet the fight's gradual success in Britain owed more to the nonconformist conscience, which also formed her. Victorian Britain did not go much for theory. But it was strong in pragmatic investigation; and—slowly—ready to put right what it found. Just as the horrors of industry in time led to legislation against them, the irrefutable facts of sex inequality led, belatedly, to laws on divorce and married women's property. At the time, these mainly benefited middle-class women; they later spread their benefits to all.

The story was much the same in schools and then universities. Donnish silliness at Oxford and Cambridge could not for ever resist the plain evidence that women should be let in. Women's colleges were set up (by women) and their undergraduates allowed into lectures, though not, for decades, to get degrees. In 1890, the Cambridge class list was headed (rather, would have been) by a daughter of Millicent Fawcett, a votes-for-women activist, who had set up her college 19 years before. The male students cheered young Miss Fawcett to the rooftops. The door was open for Britain's women.

Just open. Though some could already vote in municipal elections, only in 1918 did women (of 30-plus; younger ones had to wait till 1928) win the parliamentary franchise. And in 1999, only a third of Britain's doctors were women, a quarter of its barristers, and seven of its top 200 managing directors.





Millennium issue: MOBILITY

Humanity on the move

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From The Economist print edition



Our ancestors stayed put. We scurry around—but not for fun

A FEW centuries before our millennium began, the last remaining sizeable bit of uninhabited land fit to live in received its first humans. It had taken perhaps 200,000 years for the race to spread from East Africa to what is now New Zealand. Not so long; say, 10,000 generations.

The journey might have taken longer, had not the land masses been conveniently arranged so that nearly all of it could be made on foot. Push north out of Africa, and humanity could turn left for Europe or right for Asia. From the extremity of Asia it was not too hard to get to North America, which happily was joined to South America. Even Australia was accessible via the stepping stones of South-East Asia and some short sea voyages, though it was Polynesian islanders who made the long one to New Zealand.

Why? It is tempting to answer: insatiable curiosity. Humanity could hardly wait to get out of its African birthplace, one might argue. What a wonderful lot we are. But simple curiosity is, by itself, a fairly feeble motive for leaving a secure and familiar place.

There is a painting entitled "The Boyhood of Raleigh", which shows an aged seaman yarning to young boys and pointing towards the horizon. It was painted by John Millais, and for Victorians like him it expressed the call of the great beyond, adventure for its own sake. But Walter Raleigh, who travelled as much as any man of his Elizabethan day, was happy to return to England, even to face execution. Victorian sentiment persists to this day in daft sagas about space exploration, perhaps the least desirable form of travel ever conceived. But the real motives for the spread of humanity have been chiefly fear, the hope of reward, or a bit of both.

And, once moved, most of the species stayed put, groups and individuals alike. The man of 999 would be astounded by his descendants' mobility today. For most of the millennium, armies, traders, pilgrims and nomadic herdsmen moved, and others did not. Its great mass movements—those of the slave trade, the 19th-century migration to America, the flight of 9m Germans from eastern Europe in 1945-46—were very largely involuntary. Except in towns, the individual household was tied by its crops, or its lord's decision; even short-term movement was limited by bad roads and transport.

Not that the distances travelled on business were always short. Around 1300, the shepherds of Montaillou, the French village studied by Emmanuel Le Roy Ladurie, twice a year crossed the Pyrenees with their flocks on the *transhumance*, the move to winter or summer pasture, just as shepherds in some countries do today. The women sold their eggs in the market town nearly 20 kilometres (12 miles) away. In the 1480s, Thomas Betson, an English wool-merchant in Calais, often sailed across the Channel to buy 130km west of London, or rode

nearly 200km to sell in Antwerp. And this was nothing: Lombard merchants, he lamented, instead of coming—far enough, surely—to buy in Calais, would go direct to his suppliers in England. As another critic of this unfair trade put it,

In Cotteswolde also they ryde aboute.

Other traders, in Asia notably, as is true today, travelled far wider than that.

Yet these were the odd men out. It took the industrial revolution to make everyday mobility possible: on better roads, by train and steamship, today by car, bus—the real people-mover of the third world—and airliner. The wealth brought by the revolution made it affordable. So today hundreds of millions commute 10, 20, 50 kilometres daily to work, while among rich countries' citizens hundreds of millions each year travel to take their vacations hundreds or thousands of kilometres from home.

They do it at speed. The Pilgrim Fathers, who sailed from England to America in 1620, took 66 days. That time had been halved by the 1830s, and the "Great Western" steamship in 1838 halved it again to 15 days. By 1939 the fastest liner took less than five. The fastest mail coach in 1800 took four days for the 600km from London to Edinburgh; by 1910 the luxury Orient Express train took 2 1/2 for the 3,100km from Paris to Constantinople. Each one of these speeds would have amazed people a century earlier; to today's air traveller they are all snail-slow.

True, the pace of advance has been uneven: at the start of the 1970s, the fastest journey by train and boat from London to Paris took only six minutes less than in 1913. But the essence is unaltered: the concept of mobility, strange to most of his forefathers, is a familiar, unremarked reality to modern man. In a world of 6 billion people, the airlines linked in IATA sell some 1.5 billion tickets each year; to 1 billion Indians, Indian Railways sells about 4.5 billion tickets.

Yet we are homebodies still. Physical movement is easy, and, for the developed world, relatively cheap. Communications—the 19th-century growth of reliable postal services, then the telegraph, then telephones and now e-mail—have lessened the main disadvantage of short-term movement, the sad inability of bodies to be in two places at once, and have eased the pain of long-term migration. But now as ever the human race (unlike some birds) does not move for the sake of moving. We need a very solid motive. And, usually, money. Many millions of Hindus make pilgrimages within India each year, millions of Muslims make the *haj* to Mecca; but hundreds of millions of both faiths choose or have to stay at home.

The lure of the west

For much of the millennium, the main such motive was fear, fuelled often by the intolerance of religion. As late as 1947, it was that sort of fear which drove maybe 14m people across the Indo-Pakistani borders. Four centuries before, seven wars between Catholics and Protestant Huguenots, fought with fanatical cruelty on both sides, had racked France. In the end, the defeated Huguenots fled in their thousands, to Protestant countries in Europe or over to North America, to France's economic loss and the gain of the host lands, particularly America.

The great appeal of America for the persecuted was that, though it had its native peoples, there was plenty of room still for newcomers. And it was quite easily accessible. With today's easy land and air travel, we forget that the sea—and, still more so, navigable rivers—was for a few centuries of this millennium an easier (though

seldom easy) route to take, for some journeys, than the land. Coal, for instance, long came to London from north-east England by boat; it was even called sea-coal.

And by around 1600 even the Atlantic had lost some of its terrors. Leif Ericsson, after all, around 1000, had crossed it, probably from Norway by way of Greenland. His settlement did not flourish. But by the time the Huguenots came ashore in large numbers, America was being settled on a fairly regular basis. Ships greatly superior to Ericsson's could now ply the Atlantic reasonably sure of getting their passengers across, and in decent shape. The first permanent English settlement, Jamestown, in Virginia, was 13 years old by the time the Pilgrim Fathers reached Massachusetts.

Though Europe's tensions of religion eased, its Jews were still fleeing across the Atlantic in the 19th and 20th centuries. The 19th-century German Pietists went hoping to spread their version of gospel truth. Political dissidents fled what they considered an increasingly reactionary Europe. But the great migrations to the United States and Canada that raised their joint population from 6m in 1800 to 91m in 1910 were driven not by politics or religion, but economics.

The motive was both pull and push: a better life across the sea, but also, often, a worsened one at home—as for the victims of the 1840s potato blight in Ireland (and other places, like the lower Rhine area). Yet few went happily. Families would wait for a year, then another, if they could, hoping the next would be better. Only when it wasn't did they decide, reluctantly, to move.

Where? A British economist, Edward Ravenstein, noted in "The Laws of Migration", published in 1885, that migrants preferred to move only short distances from their homes. Some Victorians may have seen romance in the wild blue yonder, but most people are not romantics in that sense. If you did not move too far away, why, you might be able to return when things got better; like 1999's Kosovan refugees, who mostly rejected offers to whisk them to distant lands, and rushed home as soon as they dared.

The great movement of millions across the Atlantic was in part a tribal migration. Whole communities in Europe pulled up their roots, to replant them thousands of miles away. But individual families and people moved too. Even Britain, birthplace of the industrial revolution, was shedding its people at the rate of 250,000 a year in the 1850s. Yet Britain was rich and getting richer. Why not stay and get rich too?

One reason for going was official encouragement. The population was multiplying, and the government took seriously the warnings of Thomas Malthus, 60 years before, that population grows faster than the means of subsistence. Moving from crowded Britain to largely empty North America, and at the same time taking British values, was seen as an act of patriotism. Emigrés sang a popular song of the time:

Brave men are we, and be it understood,

we left our country for our country's good.

Europeans, mostly southern ones, went to South America too, though less fast. Population there grew from 23m in 1800 to 63m in 1900, and big shifts—of Italians to Argentina, for instance—went on well into this century.

The great days of mass tribal migrations are over. The European takeover of the Americas was the biggest. The slave trade took 3.3m West Africans to the Caribbean, 3.7m to Brazil; Arab traders took uncounted millions north from Central and East Africa. The import of Indian labour that has left its mark in Sri Lanka, Fiji, Malaysia,

South Africa, even Guyana, has stopped. The results have not been happy for the recipients, such as the Amerindians or Australia's aborigines, ravaged by, initially, the arrival of a mere 150,000 British convicts between 1788 and 1867. But the process—less visibly, in these days of mass short-term travel—goes on.

Those who have moved seldom rush to do it again. The Mongol horsemen who captured much of Asia mostly settled, took wives and raised families. Few black Americans have "returned" to Liberia; even Jewish Americans, deeply committed to Israel, seldom make *aliya* there. But there are always others ready to move somewhere.

Millions of "guest workers" have moved since 1950 to Europe, from Turkey, from the Arab Maghreb, some even from Vietnam. Brown and black citizens of its ex-empire have moved to Britain. Uneven prosperity within Europe has brought gentle flows from the south to the richer north.

And though governments have become selective, no barrier has been found that can keep determined people out. With some money, passage can be speeded by the growing band of experts in getting round border controls, faking passports, finding countries reluctant to turn supposed asylum-seekers away, or plain people-smuggling. For all its controls, the United States takes in some 1m legal settlers a year. But hundreds of thousands more slip in illegally. Its Pacific island of Guam is currently under assault from thousands of Chinese paying $20,000 or so to be shipped there illegally.

Economic disparities that encourage movement are likely to increase. According to the World Bank, average incomes in the richest countries were 11 times those in the poorest in 1870, 39 times in 1960, and 52 times in 1985. Life in many countries is nasty, brutish and liable to be abruptly shortened. The world today has some 14m-18m refugees, a crude word that lumps together those who have fled for their lives and others simply seeking a better one; or, often, both.

And those who stay at home

Within our millennium, humanity's new mobility has made a new world; above all in the Americas and Australasia, but not there alone. And not new just in its peoples. Ships took European smallpox to the Americas, and brought back "Indian corn"—maize—and, by 1600, the Andean potato. Hungry railway-builders emptied the American plains of bison. Australia is over-run by once-British rabbits, New Zealand by ex-Australian opossums, and both countries prosper on ex-European sheep. Countless habits have spread the same way. The world's tea plantations spring mostly from British experiments in north-eastern India in the 1830s; but leaf from China had taught Europe to drink the stuff 250 years before. And the West, of course, has carried its inventions, its alphabet, its languages, its religion, its clothes, its ways of life worldwide.

Yet for all our new ability to move, all the incentives to migrate, most people do little of either. Mexico is the world's major country of emigration; yet in the past 50 years over 90% of Mexicans have stayed put. Only a fraction of the billions in China and India have ever strayed far from their home village or town. Rich people move more; yet not one Briton in two has taken a holiday abroad. John Howard Payne was a minor 19th-century American dramatist, but he wrote a universal truth: "There's no place like home."

Paradise misplaced

Dec 23rd 1999

From The Economist print edition

Modern man knows where he stands. His map tells him

WHERE are you? To find out, align your global positioning system with some satellites, check the co-ordinates and pencil them on to a chart. Easy. But which is the miracle invention here: the space technology, or the chart? Surely the chart.

For three millennia, man has tried to map his world exactly. In vain. One reason, till recently, was that he did not know what to put where. Chunks of Africa, Antarctica and Australia were empty spaces on maps only 100 years ago. The maps were often beautiful, adorned with saints, dragons and wind-puffing cherubs, and nearly always useful, to sailors, merchants, travellers and generals, but none was perfect.

Even now, none can be. The many dimensions of the globe, its curves and changing bumps, its shifting borders and evolving landscapes, cannot all be depicted accurately on a flat sheet of paper. Not only had man to travel everywhere, and find a way to record his journey (by discovering magnetic north, inventing longitude and latitude, building chronometers and theodolites, and so on), he had then to twist, reshape and abstract all he recorded. Just as an orange may be peeled in umpteen ways, so may a globe flattened into a map. One, from 1530, shows the world like a heart, others show it like an eye, a T, a circle or a pair of circles. All distort what's really there.

And in distorting reveal. How you present the world tells something of your interests, politics, culture and perspective. Why, ask antipodeans, put north at the top? No reason, but that the world-circling Europeans lived there, they reckoned top better than bottom, and they made most maps. An upside-down one reveals a different world. One student of maps argues that

the world map has always been shaped not by science alone, but by religion, politics, art and obsession. Themes such as divine power, the natural elements, secular ambitions, recur constantly and express more than pure geography.

For notable instance, religion. Medieval mappers put much effort into locating Paradise. The Bible describes Eden as an earthly heaven with four rivers flowing from it. Surely it, and they, could be found? England's Hereford Mappa Mundi, drawn in about 1300, put Eden as far east from Britain as one could go. Others put it in East Africa or Asia, moving it on as Europeans went there and found no sign of it. Only 700 years ago, Europe's knowledge of the planet extended no farther than Ptolemy's in Roman times: just into northern Africa and western Asia. A Japanese Buddhist map from those days includes China, the Himalayas, India and Persia. For it, Paradise is on a mountain called Kailas, in Tibet.

These were maps (typically world maps, intended also as works of art) of the religious imagination—or ecclesiastical authority—as much as of the continents. Medieval Europe's map makers did not suppose that they knew the exact co-ordinates of Paradise, but they wanted to show that it was indeed on Earth, as holy writ and the church declared. As late as 1582, one map of the world went further, depicting the sites of Judgment, Purgatory and the outer and inner circles of Hell.

Suddenly, in the late 16th century, Paradise was lost, except on some regional maps. Reason was at the helm, and, particularly niggling, travellers to the East had reported no Eden to be found. The empiricism that now dominated philosophy and science inspired new mapping. With the Renaissance, as a modern novelist, Federico Andahazi, puts it, "the cartography of Heaven changes as well as that of Earth and that of the body." Suddenly map makers had to squeeze on the Americas.

Europe's map makers may have had an inkling of the Americas long before Columbus's voyage in 1492. Though most of their world maps before then showed only Europe, Africa and Asia, a few added a fourth continent. The Beatus map of 1109, a copy of one from 776, includes such a continent beyond the Red Sea. Long before, the Roman historian Pliny had speculated that there was another patch of land, to balance those already known. In 150BC a large model globe was exhibited in Rome, showing four land masses. Europe's pre-Columbians may not have had evidence of another continent, but plainly some felt that there should be one.

Some in fact did have evidence: Vikings certainly reached North America long before 1492. What's less certain is the famous Vinland map, supposedly from the 15th century, that is claimed to document their notion of its coast: studies of the map's inks and stains suggest it may well be a fake.

The most revealing thing about maps of the past 1,000 years, however, is the record of what the world's best informed people did not know. Some things which seem obvious now could not have been found without maps: that Brazil's bulge fits neatly into West Africa's dent, and so to the theory of plate tectonics, for example. The *terra incognita*, usually populated with monsters, mermaids and camels, inspired generations of explorers to set out for adventure. As those unknown territories shrunk on maps, a record was left of the limits of western man's world. By the late 18th century and Captain Cook's exploration of the southern Pacific (to check that no great southern continent existed), much of the world had been charted. It became impossible to sail off the map, there was nowhere left to misplace Paradise and the imagination had less to do.



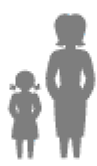


Millennium issue: THE FAMILY

Anti-nuclear reaction

Dec 23rd 1999

From The Economist print edition



The western world thinks marriage should spring from love and will lead to the nuclear family. Yet even in the West these are pretty recent notions

THE past 25 years have seen an unprecedented burst of agonising in western society about the collapse of the family. Escalating divorce, more births outside wedlock, often to teenaged mothers, the rise in one-parent families, all have become emblems of moral decline. Between 1970 and 1998, the ratio of divorces to marriages in the United States shot up by more than half; the rate of out-of-marriage births more than tripled, to about one in three. The trend has spread to Europe, first to the more socially liberal northern countries, later to older-fashioned places such as Italy and Greece. The decline of the traditional western family, goes the lament, typifies the 20th-century paradox: material prosperity, social disintegration.

But what if the ideal nuclear family of north-western Europe and America—father at work, mother at home, the pair married since their early 20s and for life, living only with their joint children—is a modern invention? Could it be that it was really a fleeting phenomenon, that peaked in the 1950s, on the back of post-war prosperity, a baby boom and the spread of mass culture? If so, the gloom begins to look less well-founded. Maybe today's western family in all of its many jumbled forms—one-parent-headed, second-time-around-headed, grandparent-headed, peopled with half-siblings or step-siblings, or combinations thereof—is simply returning to the complex, diverse state in which in fact it spent most of the millennium.

Late marriage, early death

Measured merely by their duration, marriages in the mid-20th century, as Lawrence Stone, a British historian, has put it, "were more stable than at almost any other time in history". In mid-1950s America, a couple could expect their marriage to last, on average, a full 31 years. In 1550-99 in the then village of Colyton, in south-west Britain, marriages, on average, lasted only 17 years, rising to 22 two centuries later; though the married gentry could expect a little longer.

For sure, marriages in pre-industrial times did not end, usually, for 20th-century reasons. Most often, the cause was the early death of husband or wife. As living standards, household and public sanitation and health improved, in the later 18th century, people lived longer and the average duration of marriages began to inch up.

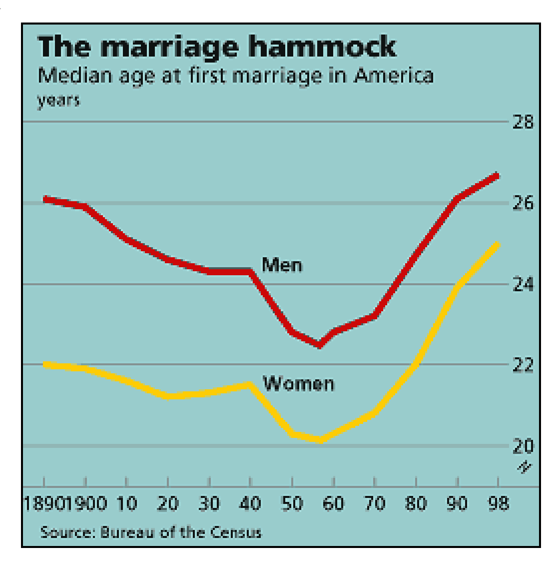
Yet even so, life in a nuclear family often was a brief experience for spouses and children alike. Many widows and widowers went on to remarry. One third of all marriages in Manchester in the 1650s, for example, were second (or even third) marriages for at least one partner. So households were often filled with all manner of combinations of half- and step-siblings—much as they are, if for different reasons, today.



Moreover, in western Europe, unlike almost anywhere else, the young might wait many years before marrying. Between 1600 and 1850, outside towns, the average bridegroom at his first marriage was aged 27 or 28, the bride at hers 25 or 26, though rich girls tended to marry quite a lot younger. That too is not so different from today. So in those days of what we would consider early death, many people spent a large part of their lives single. Indeed, about 13% of French women born in 1800, and 19% of Swedish ones born in 1850, never married. Nor, in the late 18th century, did a fifth to a quarter of upper-class English women. The *Lady's Magazine* lamented in 1773 that "the men marry with reluctance, sometimes very late, and a great many never at all." So much for the novelty of the unhappy 30-something single woman, celebrated in today's film and fiction.

The reasons for late marriage are not clear. Among the rich, inheritance laws (in England and southern France) favouring eldest sons, along with the spread of universities and professional training, may have been responsible. There is evidence from France, Italy, England and, later, America that from the 16th century the poor too married late, but for other reasons: the need—in a society where a couple would normally set up house on their own—to be able to support children; to avoid having too many of these; or the young people's jobs as servants, who were expected to stay single for quite a time.

Americans, who have supplied our century with so much of its imagery of the ideal marriage, were late converts to it. The 19th-century American male did not rush to the altar: in 1890, he was, on average, 26 years old at first marriage.That figure dipped gently to a low of 22.5 years in 1959, as the new prosperity, suburbanisation and the celebration of the nuclear family took effect. Since then, as marriage has slipped out of style, the average has inched steadily back up to nearly 27. As for staying married, European visitors to 19th-century America were astonished at the ease, long before the heyday of Reno, of divorce.



All kinds of household

Late marriage and early death may have curtailed the life of the fledgling nuclear family in north America and north-west Europe. But, even in those places, the family was found in a variety of forms. Out-of-wedlock childbirth, for example, widely blamed for current social ills, was more common at certain periods in the past than it was for most of the 20th century. Rates of extra-marital birth began to take off in the latter half of the 18th century, rising by 1850 to 6.5% in Britain, over 7% in France, and 9% in Sweden. For the first two-thirds of the 20th century, however, rates dropped to only about 4% in England and Wales. Not until the 1960s-70s did the figures accelerate, to a third of all births in England and America by the 1990s.

Even in parts of north-west Europe, peasant households seldom were made up of one nuclear family. In pre-revolutionary southern France, where a peasant could pass on his land to a single heir, married siblings and their families often crowded into the fortunate heir's household. In north and western France, where a peasant was obliged to share the land equally between his children, the nuclear family (or at least one main family, plus some unmarried siblings) was more common; it became so nation- wide when Napoleonic inheritance laws, on the northern pattern, took effect.

Even where the nuclear family appeared to exist, women usually worked. It was not until industrial times that the expectation spread that a wife should stay at home with the children. On the land, women in the West, as

today in much of Africa, did some farm jobs. Factory life, drawing men in even greater numbers away from the home, began to entrench the idea of wifely domesticity, prompting Engels to claim that

the modern industrial family is founded on the open or concealed domestic slavery of the wife.

But the notion of the stay-at-home mother did not last long. It was slow to arrive in countries like France that industrialised late; it was not universal even in early industrial England, where many women (and children) worked in textile mills. And it was quick to erode under the twin influences of the contraceptive pill and the arrival of non-muscular work in a micro-chip age.

All this in north-west Europe and America. Elsewhere, the nuclear family was a rarity. In the eastern Europe of 1500-1750, nearly all women were married by 20; most lived in big extended families of 10-15 people. In western and southern Africa, polygamy—not uncommon in England until the 11th century—remains acceptable in some rural parts even today. “At least it’s more honest than adultery, the version of it that you practise in the West,” as one black South African female politician puts it.

Love ’n’ marriage…

The lost ideal of the nuclear family has such a tight grip on the late-20th century western mind chiefly because it became, in its 1950s form, an emblem of two other ideals: the notion of romantic love as the only publicly acceptable basis for marriage, and the celebration of both child-rearing and childhood. Once again, however, for better or for worse, most people for most of the millennium did not labour under these two burdens.

Marriage made for love was not unknown in earlier centuries. Chaucer celebrates it in “The Franklin’s Tale”, a hymn to equality and love in marriage. The letters of the Paston family, in 15th-century Norfolk, in eastern England, reveal a society dominated, among the squirearchy, by rigid custom and arranged marriages designed for material and social gain. But even here, the young Margery Brews, courted by John Paston, eventually persuaded her mother to let her marry her “good, true and loving Valentine”. Yet, by and large, a woman of the landed classes was a commodity to be traded by parents with calculating care, for territorial or commercial advantage, status, power or influence. Love might grow out of marriage, but there was no need to take love into it.

Across Europe, when peasant parents had a small plot of land that they could give, while living, to their children, in return for assured support in their old age, they could often control whom the young were to marry. Indeed, in England, it was partly due to the growth of wage labour, which left parents no longer with such assets to pass on, that this control began to break down. In colonial America, settlers seem to have married earlier, and often in defiance of their parents, because they could secure frontier land.

How easily could children challenge their parents’ wishes, and make a marriage for love? Historians disagree. Some suggest that the love match became acceptable only after the Reformation, which established the concept of marriage as a more equal partnership that allowed a woman to have a mind of her own. Others argue that even earlier than this parents had less control over their young than that view implies.

Either way, by the late 17th century in England the idea that two people could choose to marry for love became increasingly widely held. Even then, “companionship” or “affection” were still features of a match to be traded off against other equally, if not more, attractive features, such as land, fortune or breeding—at least by a young woman’s father, if not by the woman herself.

The tyranny of the middle-class marriage, with its romantic obligations, by the late 20th century had ensnared even Britain's royal family, once habituated to marry off its young for less complicated, traditional royal purposes such as dynastic alliances and the breeding of heirs. But the romantic concept of marriage was already on the wane. It had reached its zenith in the 1950s; indeed, some would argue, it was at least partly responsible for the subsequent decline of marriage itself, as increasing numbers of westerners failed to live up to the expectations that this version of it imposed.

...and the kids

In tandem with romantic marriage, the cult of childhood also flourished. But only then? That too is disputed. In earlier times, the high death-rates of infants and young children, claims Mr Stone, "made it folly to invest too much emotional capital in such ephemeral things". The later cult of childhood, he argues, was the result of the survival of more babies through infancy, thanks to better hygiene and health. That was not what Henri Misson, a French writer, found on his travels to England in the late 17th century. The English with their children, he wrote with stern disapproval, are

always flattering, always caressing, always applauding what they do; at least it seems so to us French people, who correct our children as soon as they are capable of reason.

Which was much as it seemed to many Europeans meeting American parents and children some three centuries later.

Some historians find traces of this even earlier, suggesting for example that the Black Death of 1347-49, having killed off so many young, prompted those parents who survived to cherish their children more. Writing soon afterwards, William Langland said:

Don't let wealth spoil them while they are young, nor yet for fear of the plague unduly indulge them.

From at least the 17th century onwards, with the spread of clothes, toys, games and books specifically designed for children, combined with improvements in health and sanitation, childhood has become an increasingly precious, celebrated part of family life. This cult has not declined since the 1950s. Indeed, the great technology-induced social revolution of the 1960s—the development of the contraceptive pill—helped to turn children into an item of consumer choice, more judiciously brought into the world, and more burdened with parental dreams and expectations once there.

Idealised but fragile, long-admired but short-lived, the nuclear family continues to have a powerful hold on the late-20th century imagination. Perhaps this, rather than the institution itself, will prove to be its most enduring feature.

Millennium issue: AN AGE OF EMPIRES

They came, they went away

Dec 23rd 1999

From The Economist print edition

Neither the facts of European imperialism nor its motives were what they are often supposed to have been



IT HAS been a millennium of empire. Yes, but which empires? Those overseas of Portugal and Spain, Britain, France and the Netherlands? The mainland ones of Austria or Russia? No. As the era began, Europe was disunited, and feeble. As it ends, Europe and its American heirs dominate the globe. Yet Europe's empires have come and gone, short-lived all of them. And what is thought of as, above all, "the age of empire", the 40-odd years up to 1914, was not just brief but essentially trivial. Within 80 years all modern European empires were dead.

In contrast, as 1000 dawned, the Roman empire, despite the collapse of its western half, had over 1,200 years behind it and 450, to the fall of Constantinople, its eastern capital, still to go. The Chinese empire was as old, far ahead of Europe, and with 900 years to live. An Arab-Islamic empire over 300 years old was gnawing at Europe; under the Turks soon to take it over, it too had 900 years to come, and a swathe of eastern Europe besides. A Mongol empire was yet to be born, in about 1200. At its peak it stretched from the Pacific to the western side of the Black Sea. It lasted nearly 500 years.

What can Europe show in comparison? Its Holy Roman Empire, the western heir of Rome, was a fake—"neither holy, nor Roman, nor an empire," said Voltaire. The real-world one of the Habsburg family, for a time (under Charles V in the 16th century) included Spain, the Low Countries, much of Germany and chunks of France, Austria, Bohemia, Hungary and Italy. Much slimmed, it survived, as the Austro-Hungarian empire, until 1918; some 450 years in all.



As to the fabled rewards and crimes of imperialism, Charles V left his heir in Spain, Philip II, bankrupt; and an unruly, profitless handful Austro-Hungary proved for its last significant emperor, Franz Joseph, even before a pistol shot killed off his heir, and the peace of Europe, at Sarajevo in June 1914. But the Habsburgs themselves were not bad at killing, colonial-style, as the gory Duke of Alva proved in repressing the rebellious Dutch, on behalf of Philip II and holy church, in 1567; and as Italy learned under Austrian rule three centuries later. The English, under Oliver Cromwell, did much what Alva had, for mirror-image reasons, in Ireland in 1649-50; and that little corner of empire in Europe, already by then under English thumbs for 500 years, remained a colony into the 1920s.

What about the wide world, Europe's empires beyond its shores? Here, classically, is where imperialism flourished, and earned its grim reputation. Much of the reputation was deserved. Yet these empires were even sooner come and gone. So were their rewards; and the reasons most of them took shape had little to do with the economic explanations advanced after that shape suddenly ballooned in the late 19th century.



Spain and Portugal led the way, first into the Americas, later round Africa into the Pacific. Their empires were huge indeed: Brazil's 8.5m square kilometres (not that the Portuguese colonists ever saw much of them) are nearly 100 times the area of mainland Portugal. Yet the Portuguese stayed little over 300 years there, until the 1820s. Their African empire, on two sides of that continent, lasted 150 more, mainly because the rest of Europe in the 1880s could not decide how to carve it up. The Spanish empire, though far more profitable and subject to a far greater power, lasted even less; essentially, the same period as Portugal's in Latin America, though Caribbean and Pacific specks remained to be wiped up by the United States in 1898.

Germany by 1900 was the big industrial power in Europe, and rapidly becoming a maritime one too. It was eager for its belated "place in the sun", and in Europe's 1880s scramble for Africa had already got some large slices, 2.5m sq km or so, plus some bits and pieces in the Pacific—and no noticeable profit whatever. Within 35 years, during and after the first world war, it lost the lot. As for Italy, its first attack on Ethiopia, in 1896, was beaten off, and three other bits of Africa that it did acquire were its, quite profitlessly, for 50 years at most. And Belgium? Into central Africa and out again, by 1962, within 80 years.

Ah, but what about the serious imperialists of northern Europe, the Dutch, French and British? Serious they were, but even these empires were short-lived.

The Dutch were 250 years in Indonesia. France claimed Canada in 1534 and lost it 229 years later. French Indo-China lasted not 100 years before the humiliation of Dien Bien Phu in 1954. French Africa, some 10m sq km of it? Except in Algeria, not even that long.

The British empire deserves its fame. It was huge, as Russia's Asian territories were and are; at its peak, some 34m sq km, over one-fifth of the land area of the globe. Unlike Asian Russia, it was also populous; until 1947 it included the huge numbers of the Indian subcontinent. Yet its colonies on the American seaboard were British for less than 170 years. Australia, Canada and New Zealand remained British for about 100 years apiece before being handed over to their (settler) inhabitants. South Africa's Afrikaners were barely defeated in 1902 before they—not its blacks, of course—got their land back in 1910. The British were not much more adhesive even in the lands whose only claimants were brown or black: less than 200 years in India, 80 or fewer in most of Africa. The Caribbean was the one significant exception.

So why set out? And why not stay?

On the face of it, all this is very odd. Europe's ideas and money and weapons gave it greater power than any other group of peoples in history. And after 200 or 300 years, it walked out. Even the Russians have done so. Their 19th-century seizures of central Asia were done with a speed and violence that make the United States' westward expansion and Indian wars look like a leisurely church picnic. And, unlike others, under communism the Russians showed no sign of remorse, let alone of getting out. Yet out of central Asia in the 1990s they went, retaining vast areas of Siberia, it's true, but most of them barely inhabited and, today at least, barely habitable and economically useless.

So why did the imperialists ever set forth? One common, only mildly left-wing, answer is that the booming capitalist economies of the 19th century needed an assured supply of raw materials, assured new markets and

new places to invest in. And why, having gone and grabbed these, did the imperialists come home so relatively soon? The standard answer is that, for all its relative strength, Europe, exhausted by the second world war, saw it could not afford to hold on, in the face of assertive liberation movements. Besides (here the left chimes in), it realised that it could get what it wanted more conveniently under neo-colonial forms.

There is plainly some truth in this; and, rather less plainly, some falsehood.

The early empire-builders, from Spain and Portugal, were in the Americas partly in pursuit of souls; it takes heroic refusal to accept men's account of their own motives to deny that. They were also, more earnestly, in pursuit of precious metals. They cared little for trade. Spain kept foreign ships out, but hardly encouraged Spanish ones: the crown, to increase its own revenue, at one time limited them to just one port in Spain, Seville, and two in the Americas. Likewise, its efforts to tax the trade simply boosted intra-colonial commerce, lessening exports from Spain.

Later on, the Dutch indeed acquired their empire to protect their trade. And they were after commodities. But not as raw materials: these were spices, for resale. Britain too acquired parts of its empire through, or to aid, its traders; the old joke that it did so "in a fit of absent-mindedness" is tosh. Yet not wholly tosh. Its American colonies were indeed a valued market; but that is not why Britain came by them. It took Canada, from France, mainly to protect these, not for its own poor value. India, initially, was a source of manufactures, not a market for them; only later did it become that. Australia and New Zealand, when first claimed, had no commercial value at all.



Of course, one can reply that all this predated 19th-century capitalism. Yes, but an explanation of empire that explains only its last 80 years is not very useful. In fact, it does not explain much of that period either.

Securing raw materials by the 1880s really was not an issue; they were indeed needed, in ever-greater volume, but they could be, and were, bought from willing suppliers as they are now. As for markets, it is true that Europe's industrialists were starting to fear overproduction, and its governments—rather later—to install protective tariffs. Yet, even in what they saw as the depression years of 1875-95, economies were growing fast. And whatever the dreams, the reality was that, with the big exception of British sales to India (an empire already a century old), imperial markets did not amount to much; least of all, the new colonies of "the age of empire", trivial compared to markets at home.

What did Germany sell to its 14m new colonial subjects? France to its vast new areas of Africa, or even to richer Indochina? The British to Burma, taken over in 1886? The Belgians to their brutalised Congolese? Precious little, even as a share of exports, let alone of total sales. In this heyday of empire, four-fifths of the trade (and investment abroad) of European countries was with each other or developed countries abroad.

The main economic motive was surely far simpler: that of the British and Dutch for centuries earlier, the simple greed of men who reckoned they could make money "out there", and who preferred, once it proved true, to be protected and governed by their own kind. Hence the quasi-colonial concessions wrung by sundry countries from China; not just the right for their traders to trade, but to do so under, more or less, their own administration. Hence Britain's seizure of South Africa: once adventurers like Cecil Rhodes discovered its riches, who was to run the place? Unsurprisingly, Britons preferred Britons to Boers.

At least as big a drive behind the new imperialism were the rivalries of the powers. Britain, beside the peacock pride of empire, had solid strategic reasons: owning India, it needed first its old Cape Colony, later the new Suez canal, then Egypt, then the coaling station of Aden. Others fed mainly their egos. A colony, as the German emperor made plain, was a feather in one's cap—and not in the other fellow's. Italy, having got three, as late as the 1930s went for Ethiopia again; succeeded this time, and found it as useless as the others.

Why the Europeans?

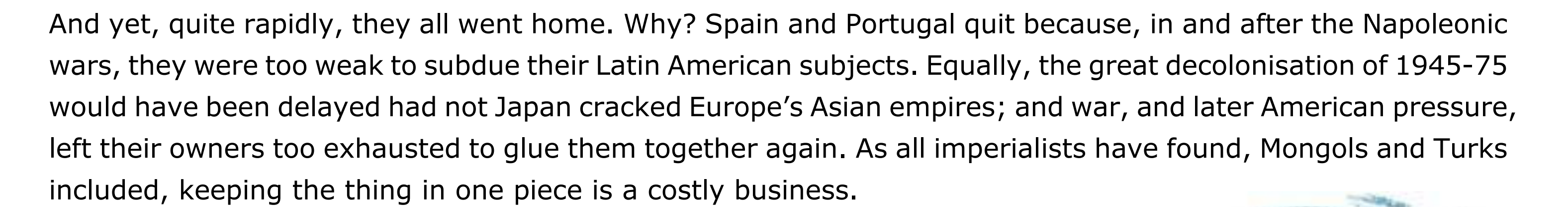
Whatever their motives, why was it Europeans who sailed worldwide and built empires? Why not (until Japan moved into Taiwan in 1895, then Korea, then Manchuria) other powers? One reason is that some others, such as the Mongols, did not need to; they used horses. Others chose not to. China "had the men, it had the ships, it had the money too"; yet a 15th-century emperor banned the building of sea-going vessels. Two centuries later, Japan did likewise. Both countries looked inward.



The Turks might have gone worldwide. Their galleys were good enough to strike fear for centuries in the Mediterranean. But their empire needed no more, and they never built ships fit for the oceans. It was Algerian corsairs, not the Turkish empire, who on one occasion raided as far north as Iceland.

But there was more to it than that. Europe had the men, the ships, the money, and on top it had the guns. It knew how to put all four together. No one else did, bar the Americans, who challenged Britain's navy in the 1770s, and blew Spain's apart in 1898; as, more significantly, Japan's navy did to Russia's at the battle of Tsushima in 1905.

But Europe had something more valuable, in this context, than technology. It had commercial enterprise and rivalries. Its umpteen states were often at war, their merchants always competing: two forces that drive technology and much else. The Spanish and Portuguese claimed a monopoly of the oceans and the Americas. Dutch, British and French sea-captains and merchants soon set out to disprove it.



And yet, quite rapidly, they all went home. Why? Spain and Portugal quit because, in and after the Napoleonic wars, they were too weak to subdue their Latin American subjects. Equally, the great decolonisation of 1945-75 would have been delayed had not Japan cracked Europe's Asian empires; and war, and later American pressure, left their owners too exhausted to glue them together again. As all imperialists have found, Mongols and Turks included, keeping the thing in one piece is a costly business.

Yet there was more to the great retreat than that. The British had to be kicked out by the future United States, indeed. Yet they chose to leave Canada, Australia and, eventually, South Africa. Even while tirelessly pretending the time was not ripe to quit India, they preached (elsewhere) the values that proved them wrong, and they tolerated those Indians who said so. The "wind of change"—a Conservative prime minister's phrase—that swept them from Africa was not just one of economic or geopolitical realism; it was also one of ideas, ideas that they themselves held. The French were tougher: they fought two vicious wars trying to retain Vietnam and Algeria. Yet the ideas were French too. The end of the European empires was indeed a triumph for the liberation movements; but

one over Europe’s stubbornness, not its best beliefs.

Millennium issue: EDUCATION

The great learning

Dec 23rd 1999

From The Economist print edition

One thing above all marks out 20th-century man, and still more so woman, from most of their predecessors: they can read. How did it happen?

> When knowledge is extended,
> the will becomes sincere.
> When the will is sincere,
> the mind is correct.
> When the mind is correct,
> the self is cultivated.
> When the self is cultivated,
> the clan is harmonised.
> When the clan is harmonised,
> the country is well governed.
> When the country is well governed,
> there will be peace throughout the land.
>
> *Confucius: The Great Learning*

THE idea that a well-schooled society is a prosperous and stable society, and therefore that educating the people is a desirable goal for a nation, dates back at least to Confucius, 2,500 years ago. Yet even in China not until around the start of the current millennium did this fine sentiment begin to be put into practice, with formal education becoming available to others than a narrow elite; and only recently has education come to be seen as every human's right—besides being, conveniently, also the key not just to harmony, good government and peace but to economic progress.

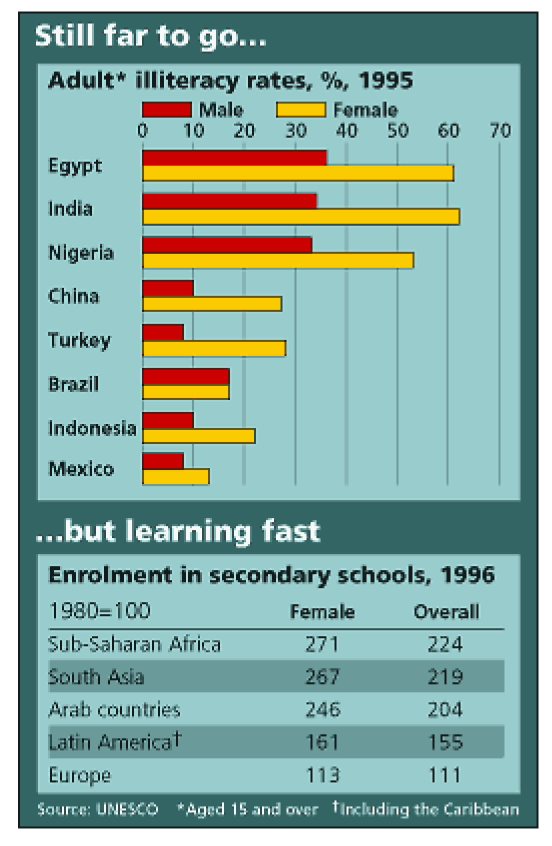
Today, in the world's rich countries, almost all children spend around ten years in classes that the state compels them to attend, usually at its expense. In the richest of the rich, around half of all children are in formal education by the age of four and a third to a half are still there at 20.

China had the makings of a fully literate society at the start of the millennium, in the good days (roughly, from 960 to 1120) of the Song dynasty. Movable type had been invented earlier, and in the Song period, with the growth of an urban society governed by a centralised bureaucracy of scholars, mass education began to take off.

The Song form of government was as important as the increasing availability of printed material in fuelling the desire for literacy. Entrance to the powerful civil service was by examination, so those wishing to enter it needed to be well schooled. Provincial towns and their rising merchant class, desiring to have some influence on the central bureaucracy, were keen to ensure that a steady stream of locals won places within it. Municipalities were allowed to retain some of the taxes they collected on the centre's behalf. So local leaders had both the motive and the means to set up schools.

Around 1000, reckons Merle Goldman, professor of Chinese history at Boston University, perhaps 30% of the 100m or so Chinese may have been literate to some degree. The school curriculum included such things as calligraphy, painting and, of course, the works of Confucius.

In Japan from 1603, the start of the Edo period, an age of increasing prosperity and literacy under a strong central government, this sort of liberal education was on offer only to the ruling samurai. Commoners received a more basic, "three Rs" type of schooling, and usually had to pay for it. But at least, in increasing numbers, they received some sort of education. By the end of the Edo period in 1868, even tiny fishing villages had schools. Japan's overall literacy rate is believed to have been close to that of England, where, following the rapid expansion of Sunday schools in the mid-19th century, more than three-quarters of children were learning to read the Bible, if not much else.



By this stage other nations, near and far, had begun to overtake China in the move to mass literacy. If China's rate of educational progress had been maintained, it would by now have reached unimaginable heights of sophistication. In fact it has a literacy rate of about 80%, while upstart regional neighbours such as Japan and South Korea have near 100%. Unfortunately for China, in about 1200 Mongol invaders began to move in, and—although some assimilated—they had priorities other than education. Elements of China's ancient school system did survive until the 19th century, but the momentum had by then long been lost.

The stimulus from abroad

Foreign invasions have not always been bad for educational standards. The Norman soldiery who arrived in England in 1066 were followed quite soon by a flood of Latin documents, offering a growing band of scholars access to the wisdom that had been accumulating in corners of the continent since the fall of the Roman empire. And, whatever their other misdeeds, later European empire-builders usually brought a previously unknown level of education to at least some of their new subjects, even in some once advanced Muslim societies, where schooling still meant schooling in the faith, as it had in medieval Europe. In India, names like Mayo or Sophia College are still among the leaders, and its home-grown Aligarh Muslim University was set up in 1875 in conscious emulation of western models.

In modern Europe, defeat in battle by Napoleon in 1806 so shook Prussia that it set about a thorough modernisation of the main institutions of the state, not least the education system, already quite advanced, by the standards of the time. A few decades later, the reform drive was paying a handsome dividend: Prussia's modern schools and universities were the envy of Europe, and were fuelling the industrial revolution which by 1900 had enabled Germany to outstrip the former leader, Britain.

Envy of other countries' educational, and therefore economic performance, had by the late 19th century become a spur to increasing both the quality and quantity of schooling. In Britain it came to be widely held that the country's poor showing, compared with France and Prussia, at the great Paris Exhibition of 1867 must have been because those countries were teaching their youngsters better. The lesson learned was that the state needed to take an active role in education, as it had increasingly in mainland Europe since 1800. In 1870 a new

law set Britain on the road to a nationwide system of elementary schools, run by local boards funded from taxation.

Around the same time, with the end of feudalism Japan decided that, for all the expansion of educational opportunities for commoners during the Edo period, it needed to adopt more egalitarian educational principles from the West, with the overt aim of speeding-up economic progress. In 1871 a central ministry of education on the European model was set up. Elementary schooling was made compulsory for all—girls included, as, till then, in Japan and most other countries, they largely had not been.

More recently, history has come full circle, with Germany finding to its horror, in a giant 1996 study of pupils' academic prowess around the world, that its educational standards were no longer to be envied, and that Japanese and other East Asian schools were better at teaching the basics of mathematics and science. Ironically, at the same time, East Asians were starting to look back in envy at education in the West, having convinced themselves it must somehow be instilling the creativity and initiative that they believe East Asia lacks and needs.

Teaching what, and why?

Until utilitarian concerns such as these began to influence curriculums, schooling—even though in most countries it had been originally created as job training for those entering the institutions of government or religion—was more about instilling character, culture and morality into young minds than passing on skills. Oriental schools looked to the works of Confucius and the sayings of the Buddha for these virtues. Those in the West looked to the ancient Greek and Roman philosophers and historians, at least as far as the elite were concerned. For the rest, the Bible was the main textbook.

Long before the idea took hold in the West that extending education to the masses was a responsibility of the state, the churches had come to see it as part of their mission. As Europeans spread to new territories across the world, priests and monks set up schools, hoping to convert their inhabitants through education. The first elementary school in the Americas was set up in Mexico in 1523 by a Franciscan monk. Despite the growth of rationalism from the late 18th century on, the churches, or individuals with a desire to spread the Good Word, continued to be a driving force in bringing literacy to the lower classes.

From the Enlightenment onwards, the idea of education as an entitlement began to take hold, and curriculums were broadened to include more utilitarian subjects such as the sciences and modern languages. But the process took time. Utility was a relative notion: Jean-Jacques Rousseau, one of the most important Enlightenment thinkers on education, considered that girls' schooling should concentrate on the practicalities of being a good wife and mother; Napoleon, a considerable reformer of French education, agreed.

Nor did governments rush to proclaim their educational duty. The bill of rights attached to the constitution of the newly formed United States of America in 1789 guaranteed free speech and a fair trial, but no right to be taught to read and write. Constitutions written in the 20th century, however—for instance, the one written by Americans for Japan after the second world war—show that it is now taken for granted that the state has a duty to ensure that all its children receive an education.

In many countries, the state is still unable to fulfil that duty. Sometimes the fault is that of corrupt or chaotic government. For many poor countries, even well governed ones, building schools and (still more so) the costs of keeping them running and of training teachers are both a battle for money and a race against population growth. The late 20th century has brought remarkable advance: the United Nations reckons that between 1980

and 1995 the worldwide rate of illiteracy among people aged over 15 fell from 31% to 23%. But that still left some 900m illiterates, more than half of them in India, only about half of whose billion people can read or write.

In the rich world, almost everyone can read and write, a stupendous change achieved mostly in the past 300 years. But literacy too is a relative term. An international study in 1997 measuring depth of literacy found that, even in highly educated Switzerland, about a fifth of all adults were at "level one": they could understand the instructions on a bottle of aspirin, but nothing much more complicated. Such inequalities remain, even though rich-country governments these days typically spend around 13% of their budgets, 5-6% of national income, on education.

Technology: more spur than tool

Throughout the millennium, the demand for more education has been spurred by technology. China's movable type, added to an earlier invention, paper, meant that more people had access to something to read and therefore it was worth learning to do so. In Europe, the industrial revolution at first needed large quantities of unskilled manual labour; but as it developed, there was a growing need for the workforce to be literate and numerate. In recent years access to employment has increasingly become a function of a worker's level of education.

As for the technology of education, there is a long history of hopes pinned on some new gadget or organisational method—and then disappointed. In the early 19th century, faced with a shortage of resources to train and pay teachers, two British educators, Andrew Bell and Joseph Lancaster, developed the "monitorial system"; teachers were to gather up to 1,000 children in one room and teach a select group of monitors, who in turn would cascade the knowledge down to the rest. "Give me 24 pupils today," Bell would say, "and I will give you 24 teachers tomorrow." It didn't work. Nor did "learning by discovery"—letting pupils find out for themselves, as dreamed up by Rousseau in the 1760s and officially recommended in Britain in the 1930s and the 1960s.

The idea of replacing teachers with educational films and radio broadcasts, enthusiastically promoted in the United States in the 1920s and 1930s, also did not get far. Today's educational television, interactive computer programs and on-line learning via the Internet all have their believers. But nothing yet looks like killing off the method tried and tested long before the millennium began: a teacher standing before a group of pupils and imparting wisdom by word of mouth.



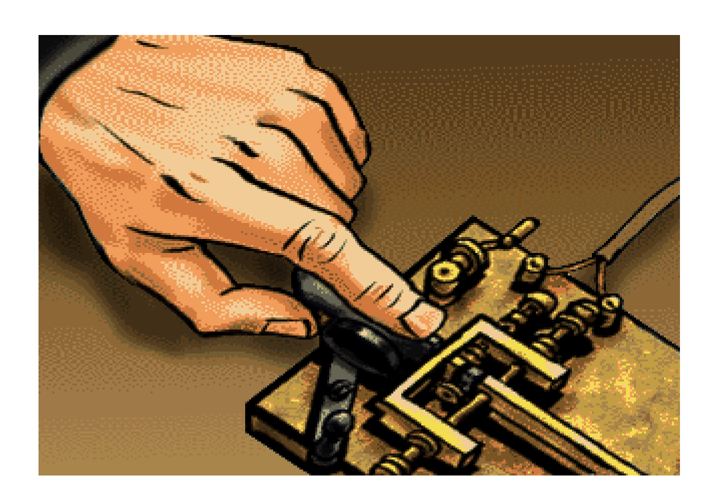


Millennium issue: COMMUNICATION

Talking to the world

Dec 23rd 1999

From The Economist print edition



Mankind's means and uses of communication, individual and mass, have changed utterly—and changed the world

NO REVOLUTIONS in technology have as visibly marked the human condition as those in transport. Moving goods and people, they have opened continents, transformed living standards, spread diseases, fashions and folk around the world. Yet technologies to transport ideas and information across long distances have arguably achieved even more: they have spread knowledge, the basis of economic growth.

The most basic of all these, the written word, was already ancient by 1000. By then China had, in basic form, the printing press, using carved woodblocks. But the key to its future, movable metal type, was four centuries away. The Chinese were hampered by their thousands of ideograms. Even so, they quite soon invented primitive movable type, made of clay, and by the 13th century they had movable wooden type. But the real secret was the use of an easily cast metal.

When it came, Europe—aided by simple western alphabets—leapt forward with it. One reason why Asia's civilisations, in 1000 far ahead of Europe's, then fell behind was that they lacked the technology to reproduce and diffuse ideas. On Johannes Gutenberg's invention in the 1440s were built not just the Reformation and the Enlightenment, but Europe's agricultural and industrial revolutions too.

Yet information technology on its own would not have got far. Literally: better transport technology too was needed. That was not lacking, but here the big change came much later: it was railways and steamships that first allowed the speedy, widespread dissemination of news and ideas over long distances. And both technologies in turn required people and organisations to develop their use. They got them: for individual communication, the postal service; for wider publics, the publishing industry.

Throughout the 19th century, the postal service formed the bedrock of national and international communications. Crucial to its growth had been the introduction of the gummed postage stamp, combined with a low price, and payment by the sender (not, as till then, the recipient). Britain put all three of these ideas into effect in 1840 (50 years later, alas, than its first plan for a penny post).

By then, the world's mail was taking off. It changed the world. Merchants in America's eastern cities used it to gather information, enraging far-off cotton growers and farmers, who found that New Yorkers knew more about crop prices than they did. In the American debate about slavery, it offered abolitionists a low-cost way to spread their views, just as later technologies have cut the cost and widened the scope of political lobbying. The post helped too to integrate the American nation, tying the newly opened west to the settled east.

Everywhere, its development drove and was driven by those of transport. In Britain, travellers rode by mail coach to posting inns. In America, the post subsidised road-building. Indeed, argues Dan Schiller, a professor of communications at the University of California, it was the connection between the post, transport and national integration that ensured that the mail remained a public enterprise even in the United States, its first and only government-run communications medium, and until at least the 1870s, the biggest organisation in the land. And in most countries—the United States was an exception—the carriers of mail became in turn the providers of telegraphy and then of telephony.

Spreading the news

The change has not only been one of speed and distance, though, but of audience. At the start of the millennium, with rare exceptions—kings, chiefs and churchmen—a man's words could reach no further than his voice, not just in range but in whom they reached. Gossip moves fast, be it from medieval mouth to ear or mobile phone to phone. But, for some purposes, efficient communication is mass communication, regular, cheap, quick and reliable. When it became possible it transformed the world. Now one voice could reach distant thousands.

Of all the mass media, from ancient official or personal inscriptions on stone to today's satellite broadcasts, those printed on paper have had the most profound influence. The book, pamphlet and newspaper have spread knowledge (and nonsense), transforming economies, politics and religion.

Before Gutenberg, books—even the reading of them, let alone the ownership—were largely the preserve of monks and the rich. Churchmen had their works of devotion; a few bibliophiles, thinkers and students were keen to read classical authors. But all had to be copied by scribes, not machines. Then came Gutenberg's device and within 50 years Europe was peppered with around 9m books, and presses turned in 60 German towns alone. In 1498, 18,000 letters of indulgence were printed in a single city, Barcelona. By 1539 Europeans were printing books in the New World too.

From then on, supply and demand boomed. There had to be an audience able to read, of course; but the spread of education saw to that. Europe's rising middle classes, increasingly literate, demanded Bibles that they could read themselves in a language they understood, as well as details of new philosophic, geographic and scientific discoveries. Printing spread plays and poetry.

None of this advance just happened. It required printers and in time a new industry, publishers. For centuries after Gutenberg, there was little change in the way books were made. Leather covers were used, and thick paper. All aspects of the trade were dominated by the printer. He was the publisher and retail bookseller as well.

He was also soon recognised as a potentially subversive force. From the early days of printing the church had tried to censor books, drawing up an index of forbidden ones. The Inquisition kept authors and printers in line. Philosophers, to prevent their works (or themselves) being burnt, were obliged to dedicate them to the proper authorities, even if the rationalist content was actually subversive. Monarchs were not far behind the church in

their suspicion, requiring books to be licensed. And they persisted in this practice far longer than the church could. Writers in 19th-century Russia repeatedly hit trouble with the censors; their 20th-century successors were to hit it worse.

The censors were too late. Already the 18th century, and then, above all, the industrial revolution, had changed the world of books. Demand for books and learning—and distraction—exploded. With improved transport and better technology, the 19th century took books to the masses, novels to young ladies and texts to the new universities. Writers, printers and distributors were no longer bound together. "Literature for the millions," promised Archibald Constable, a gifted bookseller and an owner of the Encyclopaedia Britannica at the start of that century. By the end of it, 6,000 new titles were being published annually in Britain alone.

As with books, the spread of newspapers had a profound effect on European society. The first ones, in the late Middle Ages, specialised in commercial news, mainly from abroad. But by the time of the English civil war in the mid-17th century, there were some 300 newspapers reporting the battles from one side or the other. A sign of newspapers' importance from an early date is the effort governments made to restrict their sale, through taxes or simple repression. Britain's 18th-century Stamp Act was known as a "tax on knowledge". The first country to guarantee press freedom was Sweden, in 1766.

With the industrial revolution newspapers were transformed from campaigning pamphlets or carriers of specialist knowledge to big business. New technology brought down costs: hand-driven presses gave way to steam-driven ones, and then electric ones. By the late 19th century newspapers could be produced by the hundred thousand in a few hours. Their nature also changed, and their price. The tabloid press was born, its taste for scandal, exposure of wrong-doing, hard-hitting editorials and smooth fabrication no less then than now: the Hearst press worked hard to start the United States' 1898 war with Spain; the London *Daily Mirror* savaged the lack of lifeboats on the sunken *Titanic*.

The electric message

What we now call "hard copy" has continued essentially unchanged since Gutenberg. Letters are still written, books bound, newspapers—mostly—printed and distributed much as they ever were. But meanwhile, communication, individual and collective, has been revolutionised by electricity.

The first telegraph was mechanical: a tower with movable arms whose positions could be read from afar with a telescope. In 1794, a line of these carried news of a battle within an hour of its end 210km from Lille to Paris. Over the next 40 years, such lines fanned out across Europe*.

Then, in 1816, one Francis Ronalds, who had built a primitive electric telegraph in his west London garden, suggested the idea to the British navy. Any kind of telegraph, he was told, was "wholly unnecessary". Not till 1839 did two British inventors, William Cooke and Charles Wheatstone, open a commercial electric telegraph along a 21km stretch of railway from London. Samuel Morse, an American, had also been working on telegraphy, and by 1838 had perfected his code. A wired world was on its infant feet.

"The telegraph should be an instrument of politics, not of commerce," snorted France's minister of the interior in 1847. In vain: it transformed commerce. Indeed in the United States, thanks to the high charges of private companies, its use was almost entirely commercial. Railways used it to run their single-track lines safely; salesmen to transmit orders; market-men of every kind to learn prices, buy and sell; isolated farmers to send for spare parts; shipowners, once undersea cables had been laid—the first transatlantic one in 1858—to tell their captains where cargo was to be found.

Next the telephone, initially greeted almost as sceptically as the telegraph. “Too many shortcomings to be seriously considered as a means of communication. Inherently of no value to us,” said Western Union in an internal memo, after being offered Alexander Graham Bell’s patent for $100,000. By 1910 the world had 7m telephones; by 1950, about 51m; by 1990, 520m; and today around 1 billion—plus almost 500m mobile phones, not 20 years after they came into use (and AT&T misjudged their commercial future, much as Western Union had erred a century before). These too have brought a new dimension to communication: suddenly, mankind can talk to the world from car, street, field or swimming-pool. More than that, mobiles have brought the telephone to millions in poor countries, where land lines were and often still are hard to come by.

Yet it had not been immediately clear what the telephone’s best use would be. A service was set up in Budapest in 1893 to provide what one might call on-line news and entertainment, interspersed with advertising. In the evening it offered a children’s programme and lessons in English and French; on Sunday a grand concert. At its peak, in the 1920s and 1930s, the service had more than 10,000 subscribers, and it died only in 1944.

The broadcasters

That, briefly, was the first mass-communication by electrical means, a role soon to be monopolised by wireless. But the first use of wireless was for “telegraphy” at sea (the *Titanic*’s set was used mainly for passengers to keep in touch with land). And transatlantic telephone calls went by radio until the first submarine telephone cable to carry them was laid in 1956. In the early years of this century, AT&T saw radio as a potential threat to its landline network. Only now has that threat become real, as voice calls migrate to wireless (while television broadcasts, paradoxically, increasingly go by cable). By the 1920s, when radio shares were booming as madly as Internet shares were doing recently, AT&T had changed its mind and tried to become a big fish in broadcasting (only to bow out rapidly, to dodge antitrust lawsuits).

The radio wave was soon to find its true vocation: as a mass medium, to rival the centuries-old newspaper press, and, with added entertainment, to outstrip it. This was especially true in the United States. Other countries, with their state-owned telegraph and telephone services, moved naturally on to state broadcasting. America allowed a ferment of competition to grow into a handful of (regulated) private networks. At first their broadcasts were subsidised from sales of radios, to get customers to buy the set. Then they invented the radio commercial.

With it, communications were changing commerce yet again. National brands, which national magazines had begun to build, flourished on the back of national broadcast entertainment. As commercial radio and then television arose, so did whole new industries: advertising agencies, programme makers, public-relations consultants, stars. Hollywood’s bread and butter has long come from television; films are the jam.

The step up from radio to television may seem an essentially technical one, however brilliant as such. Not so. A picture really is, in some respects, worth a thousand words, as magazines like *Life* had long since proved; and now the newsreel, once reserved to cinema-goers, was available in any home in any rich country at the turn of a switch. Television could shape politics, and did, witness American reaction to the Vietnam war. And, increasingly, “the news” is what happens on camera. Off camera, it just didn’t happen.

Or if editors choose not to show it. Happily, though, satellite and cable broadcasting are changing that balance: no longer need viewers, even in some closed societies, rely on a monopoly, state-run broadcaster.

Technology has also now brought the most potent tool of communication ever available to the individual. Using e-mail or website, he or she can now publish, to one recipient, to hundreds, to tens of thousands. The noise

about the web is all about its use for selling and buying. Huge changes it will bring. But the best change may be a new empowerment of the individual; a return to pre-Gutenberg days, when one man's voice could reach as far as almost any other.

* Their capacity, calculates Laszlo Solymar in "Getting the Message: a History of Communications" (Amazon.co.uk), was 0.2 bits per second, against the 10 billion carried today by a single optical fibre.





All change

Dec 23rd 1999

From The Economist print edition



1824

THE railway is not just a means of moving goods and people. In doing that, it moves ideas too—in their heads, in mail, books, newspapers. It was a huge opener of communication in the 19th century. In 1824, the Edinburgh *Scotsman* foresaw the social changes that it would bring:

When the steam-coach is brought fully into use, there is nothing very extravagant in expecting to see the present extreme rate of travelling (ten miles per hour) doubled. The tour of Europe might be accomplished in a shorter time than our grandfathers took to travel to London and back... The Americans, with their characteristic ardour for improvement, are now collecting information about railways and locomotive machines in England. At the moment when the gigantic republics of the New World are starting into existence, the inventive genius of man is creating new powers to cement their vast and distant members together and give the human race the benefits of a more extended and perfect civilisation...

It would be rash to say that even a higher velocity than 20 miles an hour may not be found applicable. Such a new power of locomotion cannot be introduced without working a vast change in society. The provincial towns of an empire would become so many suburbs of the metropolis. Commodities, inventions, discoveries, opinions would circulate with a rapidity hitherto unknown, and the intercourse of man with man, nation with nation, would be prodigiously increased.

Not least, the paper might have added, by Scottish emigration to England; a process, as any Scot knows, that raises the average IQ of both countries.





Millennium issue: COMMUNICATION

The world language

Dec 23rd 1999

From The Economist print edition

INDIA has about a billion people and a dozen major languages of its own. One language, and only one, is understood—by an elite—across the country: that of the foreigners who ruled it for less than 200 years and left 52 years ago. After 1947, English had to share its official status, with north India's Hindi, and was due to lose it in 1965. It did not happen: southern India said no.

Johnson

Today, India. Tomorrow, unofficially, the world. That is well under way; at first, because the British not only built a global empire but settled America, and now because the world (and notably America) has acquired its first truly global—and interactive—medium, the Internet.

On the estimates of David Crystal, a British expert, some 350m people speak English as their first language. Maybe 250m-350m do or can use it as a second language; in ex-colonial countries, notably, or in English-majority ones, like 30m recent immigrants to the United States, or Canada's 6m francophone Quebeckers. And elsewhere? That is a heroic guess: 100m-1 billion is Mr Crystal's, depending how you define "can". Let us be bold: in all, 20-25% of earth's 6 billion people can use English; not the English of England, let alone of Dr Johnson, but English.

That number is soaring as each year brings new pupils to school and carries off monolingual oldies—and now as the Internet spreads. And the process is self-reinforcing. As business spreads across frontiers, the company that wants to move its executives around, and to promote the best of them, regardless of nationality, encourages the use of English. So the executive who wants to be in the frame, or to move to another employer, learns to use it. English has long dominated learned journals: German, Russian or French (depending on the field) may be useful to their expert readers, but English is essential. So, if you want your own work published—and widely read by your peers—then English is the language of choice.

The growth of the cinema, and still more so of television, has spread the dominant language. Foreign movies or sitcoms may be dubbed into major languages, but for smaller audiences they are usually subtitled. Result: a Dutch or Danish or even Arab family has an audio-visual learning aid in its living-room, and usually the language spoken on-screen is English.

The birth of the computer and its American operating systems gave English a nudge ahead; that of the Internet has given it a huge push. Any web-linked household today has a library of information available at the click of a mouse. And, unlike the books on its own shelves or in the public library, maybe four-fifths is written in English. That proportion may lessen, as more non-English sites spring up. But English will surely dominate.

The web of course works both ways. An American has far better access today than ever before to texts in German or Polish or Gaelic. But the average American has no great incentive to profit from it. That is not true the other way round. The web may even save some mini-languages. But the big winner will be English.

Millennium issue: THE UNIVERSE

The outward urge

Dec 23rd 1999

From The Economist print edition



No endeavour in history has extended the frontiers of human understanding as much as science has. And the job is not over yet

TWO of the most profound changes in the intellectual landscape that a time traveller from 999 would notice are that the world has become far vaster and older than he could possibly have imagined, and that humanity is no longer its be-all and end-all. His attitude to knowledge would probably be that "Man is the measure of all things" and "The proper study of mankind is Man."

Well he isn't, and it isn't. An educated person from the tenth century—at least one brought up in the Christian tradition—would see humanity as the zenith, indeed the whole point, of Creation. He would believe the world to be but a few thousand years old, because that is the answer arrived at by piecing together the evidence from the Bible. And he would have but a hazy grip on its physical limits beyond the boundaries of the old Roman Empire, which had collapsed several centuries before his birth.

The reality, however, is that Man is a lucky accident living in a universe that is 13 billion years old on a planet that did not even exist for two-thirds of that universal history. And that planet is such an insignificant part of the whole that its dimensions compared to the universe it inhabits are less than those of an atom compared to it.

Man is a lucky accident living in a universe that is 13 billion years old on a planet that did not even exist for two-thirds of that universal history

In the context of these numbers, to argue that Man—a creature less than two metres tall, with a life span that rarely exceeds a century, and with a history as a separate species that goes back only about 200,000 years—is the measure of all things, seems a bit arrogant. And while it is certainly proper to study humanity (if only because the gathering of knowledge must be made to pay its way in measurable benefits to the species that does the studying), the best scientific insights have usually come not by asking grand, philosophical questions about the meaning of human existence, but small, practical ones, such as whether objects of different weights fall at the same rate.

The message of the stars

The person usually credited with starting the scientific revolution is Galileo Galilei, a Pisan scholar born more than halfway through the millennium, in 1564. Galileo is famous—and rightly so—for defending the idea that the earth circled the sun, rather than the other way about, against religious authorities that found this idea inconvenient. He was, in effect, science’s first martyr, even though he publicly recanted his ideas when faced with the rigours of the Inquisition. But he did not invent the heliocentric theory (that was done by Nicolaus Copernicus and perfected by Johannes Kepler). His true greatness was in establishing the experimental method on which modern science depends.

Before Galileo’s time, natural philosophy, as what has come to be called science was then known, was essentially an armchair occupation. Its practitioners were readers (of ancient, usually Greek or Arabic, texts), observers (of the heavens, for example) or collectors (of natural curiosities). They were not, generally, doers.

Galileo did things. Most memorably, at least according to legend, he threw objects off the leaning bell-tower of Pisa cathedral to show that all, whether light or heavy, fell to earth at the same rate. That result contradicted Aristotle—something that well-behaved philosophers of the period were not supposed to do. It also, small thing though it was, helped Isaac Newton to formulate his laws of motion and gravity. And gravity goes to the heart of the question of why the universe (and therefore humanity) is here at all. That is because it is an inherent property of mass. And the search for the elementary particle, known as the Higgs boson, that gives mass to otherwise massless particles, is connected to the search for the explanation of the slight difference between matter and antimatter that allows the former to prevail and the universe to exist in the first place. By asking a simple question about falling bodies, Galileo kicked loose a pebble that triggered an intellectual landslide which addresses the most basic questions of existence.

Galileo also helped to develop the telescope. That made the universe bigger. The Milky Way resolved into separate stars. And with that came the realisation that those stars were other suns—faint not because they were small, but because they were far away. In this case Galileo’s discovery led eventually to the idea of triangulating the positions of nearby stars against the positions of more distant ones, by using the earth’s orbit as a baseline. Then, because a star’s colour is related to how brightly it shines, the distances to further stars could be determined by comparing their apparent luminosity, as viewed from earth, with their real luminosity, as calculated from the luminosity of nearby stars of known distance.

Using that information it was discovered that certain variable stars also have predictable real luminosities. And examination of those variable stars revealed that the Milky Way was not alone. In 1923, Edwin Hubble calculated the luminosities of some of the variables in hitherto mysterious astronomical patches such as the Andromeda nebula. He found that these stars were so far away that the nebulae had to be separate galaxies. Then, in 1929, he showed that these galaxies are receding from one another. The universe, in other words, is expanding. Which suggests that it had a beginning. Which is now known as the Big Bang and is placed those 13 billion years ago.

And that is not the end of it. Just as Hubble was not content with a single galaxy, and saw that the Milky Way is but one example of a general phenomenon, so modern researchers are toying with the idea that the universe itself is not alone. They envisage a sort of "hyperverse" in which new and different universes are constantly budding off one another, and also a "multiverse", which contains an infinite number of parallel, but slightly divergent versions of each universe in the hyperverse. Reality, it seems, may have no boundaries at all.

Modern researchers are toying with the idea that the universe itself is not alone

The inward vision, too, goes on and on. A few decades after the publication of Galileo's book "The Starry Messenger" in 1610, Antoni van Leeuwenhoek began to magnify the close-but-tiny rather than the large-but-distant. When he did so, he found things even more disturbing to the human solipsist than Galileo's discoveries.

Leeuwenhoek did not actually invent the microscope. But it was he who used it to extend human intellectual horizons by showing that the universe is not only vaster than had been conceived, but also smaller. Leeuwenhoek's main discoveries were in the realm of biology. The earliest microscopists were anatomists—again, bound up with the direct study of Man. Leeuwenhoek instead turned his microscopes on the non-human universe. He saw, in William Blake's famous couplet, "a world in a grain of sand, a heaven in a wild flower." (It was Newton, in contrast, who held infinity in the palm of his hand, and eternity in an hour.) In particular, Leeuwenhoek saw an unsuspected world of "animalcules"—the tiny creatures known today as protozoa.

This was a truly revolutionary finding. People may not have known exactly how far it was to the stars, but they felt from the earliest of times that the universe was, in some sense, big. But the idea of a microscopic world, oblivious of humanity, and to which humanity had hitherto been oblivious, was different—and a lot more disturbing. And worse was to come. For the next century saw an attack on the age of the universe too.

Time out of mind

In 1749 Georges Buffon, the keeper of the Royal Botanical Gardens in Paris, came up with a radical thought: that the earth and the other planets had not been created separately, but rather had been knocked off the sun by its collision with something else. (Buffon speculated that this something else had been a giant comet.) That speculation led him to make the first scientific calculation of the earth's age, based on the amount of time it would have taken it to cool from the sun's temperature to the value it had reached in the 18th century. The answer he got was 75,000 years—more than 12 times the prevailing estimate based on the Bible.

This was not well received. But it soon turned out to be an underestimate. In 1785 James Hutton, one of the founders of geology, proposed a theory called uniformitarianism. He realised that the rocks he was looking at did not support biblical ideas about a catastrophic flood. Rather, they suggested that rock formation was a gradual process—so gradual that Hutton said he could see no sign of a beginning to the earth's history.

After 1800, the boundaries of the observable were pushed out rapidly. In 1803 John Dalton revived and extended the ancient Greek idea that matter is composed of indivisible (and extremely tiny) particles, which the Greeks, and he, called atoms. Just how tiny atoms are became apparent in 1865, when a chemist called Johann Loschmidt managed to work out that there are more than 1,000,000,000,000,000,000,000,000 of them in a gram of hydrogen. But atoms are not the smallest things around. In the 1890s the first subatomic particle, the electron, was identified by J. J. Thompson, and it was followed over the next 100 years by a veritable zoo of

such discoveries. These particles can be as small as a billionth of a billionth of a metre across, and may last for less than a million of a billionth of a billionth of a second.

And time has continued to get longer as well as shorter. Lord Kelvin, a British physicist, applied Buffon's reasoning to the sun. He assumed that the sun's heat must come from energy released as the solar gas contracted under gravity, and in 1862 he announced that the process had been going on for about 100m years.

Which was excellent news for protagonists of the biggest knock to date of the idea than Man is the measure of all things. That had come in 1859, with the publication of "The Origin of Species", by Charles Darwin. This book provided, in natural selection, the mechanism that biologists required to explain the diversity that they observed. And Kelvin provided the time for that evolution to have occurred. Indeed when, with the discovery of radioactivity and its application to the dating of rocks, Kelvin's millions of years turned into billions of years, it could be seen that natural selection had had all the time it needed to fashion that most curious natural product of all—the human brain.

Which is just as well. For while it may be clear that Man is not the measure of all things, he is, nevertheless, the measurer. And even if the proper study of mankind is not Man, the most interesting study in the next millennium will probably be of that curious brain—not least of the reasons why it feels compelled to find out so much about itself and the universe it inhabits.




Millennium issue: THE BODY

A dose of history

Dec 23rd 1999

From The Economist print edition



Medicine has changed a lot over the past 1,000 years. But it has also stayed the same a lot

IN SICKNESS, as in health, people have always been touchy about their private parts. Genital disorders such as testicular swelling can be particularly uncomfortable, as one young man describes:

Out of shame I concealed myself for a considerable time, watching carefully for a chance to bathe alone in the small hours. At long last I disclosed my misfortune to my parents and after many treatments (how many!) had been performed on me, in the end, after taking counsel with them, I entrusted myself for surgery to the surgeons in the hospital of Sampson. I will omit what horrible things I experienced while on my back. To sum up everything, I state that I actually despaired of life at the hands of the physicians.

His embarrassment, anxiety, helplessness and pain will be familiar to anyone who has suffered a serious illness and has been on the receiving end of modern medicine. But Stephen, the man in question, is not a 20th-century patient. He was, in fact, a priest from Constantinople, who lived in the seventh century. In the end, after doctors failed to heal him, Stephen found relief in a few well-aimed doses of holy oil from the shrine of St Artemios at Oxeia.

A thousand years ago, medical miracles were the stuff of saints and the stars. Now, doctors and laboratories are the sources of clinical wonder, from transplant surgery to gene therapy. There is no question that science has transformed medicine since 999, giving it new knowledge, fancy tools and a scope almost unimaginable to those alive even at the start of the 20th century, let alone in Stephen's day. There is, however, much in modern medical culture—in the way doctors and patients behave in pursuit of health—that patients at the turn of the previous millennium would recognise at the threshold of the new one.

Playing doctor

If Stephen were to fetch up in a hospital waiting room today, he would surely be amazed at the numbers waiting with him. The world has 20 times as many people as it did 1,000 years ago. In Stephen's day, humanity had a hard time keeping its numbers up, and for centuries afterward malnutrition, poor hygiene, parasitic infections and disease took a heavy toll: infant mortality among the poor of medieval Europe was several hundred per 1,000, and even those who reached adulthood could expect to die in their 30s.



Stephen would no doubt be surprised how old his fellow patients are at the end of this century. Today, the average Englishman dies aged 75. That is, in part, due to better nutrition, housing and working conditions. But it is also due to scientifically inspired public-health measures such as better sanitation and mass vaccination against infectious diseases, together with the widespread use of antibiotics against many of those diseases that vaccination has failed to prevent.

Health and efficiency

Medical milestones

Date	Discovery or event	Discoverer or instigator
1628	Circulation of the blood	William Harvey
1796	Vaccination	Edward Jenner
1846	Anaesthetics	William Morton
1862	Germ theory of disease	Louis Pasteur
1897	Aspirin	Felix Hoffmann
1921	Insulin	Frederick Baintry/Charles Best
1939	Antibiotics	Howard Florey/Ernst Chain
1953	Structure of DNA	James Watson/Francis Crick
1967	Heart transplants	Christiaan Barnard
1977	Extermination of smallpox	World Health Organisation

And yet Stephen might also be astonished by the range of ailments which now afflict mankind. Despite living longer, modern man seems to have more diseases than his ancestors. Partly, again, this is a matter of better science. Doctors have teased apart, and then named (often after themselves), syndromes that their predecessors would simply have lumped together as, for example, consumption.

Partly, however, it is because modern people (at least, those fortunate enough to live in rich countries) do suffer different diseases from those prevalent a millennium ago. In medieval times the killer afflictions, battening on bodies often weakened by malnutrition, were mainly infectious: typhus, measles, leprosy and malaria (plus, for centuries, well into the modern era, recurrent attacks of plague). At the end of the 20th century, the main scourges of Europe and America are chronic conditions such as atherosclerosis, obesity, Alzheimer's disease, diabetes and arthritis. Illness nowadays is still nasty and brutish, but it is no longer as short as it used to be. And patients from the 11th century might also be surprised to see how their 20th-century counterparts turn to medicine to deal, not just with sickness, but with inconvenient aspects of normal life such as low mood, sexual impotence and unshapely anatomy.

Indeed, Stephen would find the human body much changed since his day. Medicine has added a few new pieces in the past 50 years—cardiac pacemakers and silicone breast implants, for example. But over the centuries it has uncovered many more. Human dissection was frowned upon in Islamic and early-medieval European medicine, so doctors in the early part of the millennium had to make do with the texts of ancient Greek practitioners, such as Galen, and their own handiwork on animals.

They would not have known the real structure of some body parts, such as the liver (which was thought to have five lobes, like a dog's, not the actual three), or indeed the existence of many hidden tissues, such as the fallopian tubes, which were first described during the Renaissance, by Gabriello Fallopio. But thanks to such new-fangled instruments as the microscope (developed by Antoni van Leeuwenhoek in the 17th century), the endoscope (a 19th-century invention) and X-rays (discovered by Wilhelm Röntgen in 1895), and now to such 20th-century tools as lasers, ultrasound, computerised axial tomography (CAT) and magnetic-resonance imaging (MRI), the body's anatomy has little left in the way of mystery.

The same cannot be said of its chemistry. More than $55 billion a year is spent on medical research, and most of it is aimed at understanding the biochemistry of living cells. A millennium ago, doctors thought that good health depended on the harmony of four bodily humours—phlegm, bile, choler and blood—whose imbalance could be read in the urine, and redressed by bleeding, searing, draining and purging.

Today, disease is seen as a malfunction of molecules—genes not encoding what they should, biochemicals not meeting the correct partner, viruses hijacking cells' machinery and so on. Modern medicine has devised a complex system of diagnosis and treatment based on this molecular model of the body, just as the medicine of the first millennium had done with its humours. But although this is clearly on the right track, much of the body's biochemistry remains mysterious, and in the cases of many drugs, doctors have little more idea of how they work than a medieval herbalist would have had of how his tinctures and decoctions did.

Larger than life

Such private uncertainty does not, however, alter the air of omniscience frequent among ancient and modern doctors alike. And though the science of medicine has changed beyond recognition in the past millennium, its organisation has not.

In 999, organised medicine in Europe was essentially restricted to monasteries and palaces. But within two centuries it had fanned out through the cities and towns of the continent. The medical order of precedence was quite clear: physicians at the head, surgeons in the middle, apothecaries, barbers and the rest tagging along behind. Relations were often as strained between the ranks as they are today: the turf wars which now break out between, say, general practitioners and pharmacists over the authority to prescribe would seem familiar to those from an earlier age.

In the past 150 years there has been one notable change: surgeons have seen their profession rise to the top of the medical hierarchy. Patients have learned to put their faith in the surgeon's knife, a fate which medieval sufferers shunned as a last resort. Stephen's unspeakable horrors with his surgeons, for example, would be a little less traumatic today thanks to anaesthesia, analgesia and antisepsis, all marvels of the 19th century. He might find it interesting to note, however, that modern surgeons often lament the decline of their craft. New drugs, and a more sophisticated understanding of the processes of diseases such as cancer, make the surgeon's creed, "when in doubt, cut it out", seem as crude a way of dealing with illness as it was a millennium ago.

Then, as now, medicine was a profitable profession. Around 1400, a physician with the good fortune to work for some lord could earn up to £40 a year (around eight years' pay for a common labourer) and receive costly gifts on top. Those in the service of royalty did even better. The English king paid his doctors up to £140 a year, and showered honours and gifts, even sizeable estates, on them. A course of treatment might cost a middle-class patient up to £2. Then as now, says Carole Rawcliffe, a medical historian at the University of East Anglia, satirists jeered at the fat-cat salaries of doctors. Then as now, patients used to sue their doctors for malpractice. And patients often won—in some cases substantial awards of more than £10. These penalties provided some means of hitting the unqualified, incompetent or downright fraudulent at a time when the guilds that licensed them were yet to win real authority.

Such tangles between doctor and patient put strain on their relationship. An early medieval physician could well appreciate the desire of his 20th-century counterpart to cover his own back and insist that patients sign lengthy consent documents before he lays a finger on them; 14th-century surgeons used to bring patients' relatives before the civic authorities to do the same.

On the whole, however, doctor and patient got along amicably as equally impotent allies in the battle against disease. Much of medieval medicine was about prevention, with physicians and laymen working together to improve diet, strengthen the body and avoid stress. Patients alive then used to lap up their *regimina sanitatis*, healthy-living guides, with much the same enthusiasm that modern ones have for medical information on the Internet. Indeed, it is ironic that after a century of high-tech therapeutic medicine, such preventative measures are back in fashion in western health care. At the last turn of the millennium, doctors used an ounce of prevention because there was no pound of cure available; these days, cures cost many millions of pounds (or dollars) and health-care systems turn to prevention because they are struggling to afford anything else.

As Roy Porter, a medical historian at the Wellcome Trust in London, points out, perhaps the most startling development in the past millennium of medicine is the transformation of a cottage industry into a multinational, $2 trillion business. At the beginning of the passing millennium, hospitals were small, church-run institutions that sheltered the sick, the poor and, above all, the dying. Today they are gleaming cathedrals full of expensive equipment and heavily insured patients. Around 1300, the drug industry consisted of individual apothecaries and a hodge-podge of herbal, mineral and animal-derived compounds; today, the world's $300 billion pharmaceutical industry turns out thousands of different drugs. In the early centuries of this millennium, governments steered clear of medicine. It took extraordinary events, such as the Black Death, to drag municipal authorities into action. Today, it is hard to keep the state out of medicine, especially in Europe, where it co-ordinates public health and controls access to medical care.

In one respect, seventh-century Stephen would find the world of medicine today not greatly changed. Now as then, medical care is not equitably distributed. While the West has flourished in the past century of technological achievement, much of the world's population dies from the same old scourges of malaria, tuberculosis and malnutrition that killed it 1,000 years ago. In one odd way, inequity has even grown worse. The rich have always bought more care, but that has not always meant better health: in the past, treatment was often aggressive, and might be a killer itself. Today, disease and medicine alike have a great respect for wealth. It will be the next millennium's task to cure that.




A thousand years of con-tricks

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From The Economist print edition

And us suckers who swallowed them

ONE thing has not noticeably changed since 999. Throughout the millennium, tricksters have found an ample supply of suckers. Indeed, the growth of population has turned the saying “there’s one born every minute” into one of the few things that they haven’t got up to, an understatement.

The millennium began with a brilliant feat of creative marketing. A Northman known as Erik the Red had discovered an Atlantic island almost entirely covered by snow and ice. Hand on heart, like any estate agent, he described it as a desirable residence with all mod. cons., including fertile farmland and a mild climate. A con it was. Numbers of people were beguiled into going there to set up a colony. It did not last. Erik’s fertile prose did. You will find the island in any atlas, named as he named it: Greenland.

Meanwhile, other Northmen, who had seized the part of France thereafter called Normandy, were taking a crash course in French. This enabled them, when their local duke, one William, led them across the Channel in 1066, to claim that they were bringing European civilisation to the benighted Angles and Saxons. Wrapping this cover story around their land-grab, they fooled many of the natives into regarding “Norman blood” as a sign of aristocratic superiority, and a licence to exploit those whose land it actually was and who actually worked it.

By 1100, the campaigns known as the Crusades had been begun by an assortment of European warriors, urged on by popes who readily handed out “indulgences”, promises that a holy warrior would be all right in the next world, however black his sins in this one. Soon some Vatican official saw that indulgences could be a nice little earner, if they could be sold. So sold they were. To get one, you did not need to slaughter the paynim, just to pay up.

The money rolled in, for four centuries. In time, it would finance the building of a new and grander St Peter’s in Rome. Europe swarmed with “pardoners”—friars and others licensed to sell indulgences, passing the money back to headquarters after taking their commission. Chaucer sent a pardoner among his pilgrims to Canterbury; a persuasive rogue, of course, and plainly not one who felt he needed any pardon himself. Not until four decades and one Reformation after Martin Luther had denounced this fraud on the consumer was truth in advertising reluctantly accepted by Rome.

Inevitably, the discovery of the New World enlarged the potential for further successful scams. One widely successful, even to this day, is that it was a discovery at all, as if several million people had not got there already. A second, which ran for some 300 years, was that the said millions would benefit greatly if their souls could be assured of despatch to their conquerors’ version of the next and better world; and that, if they refused to believe this manifest truth, their bodies should be despatched there anyway.

Columbus himself set some key precedents, at the expense of the Europeans who had sent him. To save his first westward voyage from failure, he had to doctor his ship’s log, so that his near-mutinous crew never knew how far they had gone. And although, in 1492, he honestly thought he had reached the East Indies, it is hard to find an innocent explanation for his persistence, after four voyages and 11 years, in claiming to have touched “the mainland of Cathay” and been “within ten days’ journey of the Ganges”. He thus set out guidelines for Americans that would broaden down from precedent to president. Sellers of snake oil, gold bricks and the

Brooklyn Bridge owed him something. So did the men who enriched the annals of the White House with chapters headed Teapot Dome, Watergate and Iran-Contra.

Surely, when the Age of Reason succeeded the Age of Faith, there had to be a lessening of gullibility? But just look at that acme of Enlightenment, the 18th century. In Britain, its early years were marked not only by John Blunt's vast financial scam called the South Sea Bubble, but also by many less remembered but even more shameless promotions. In one such, the suckers were urged to invest in a scheme, derived from medieval alchemy, to turn lead into silver. Another, reaching back to the Ancient Britons, promised vast profits from trading in woad.

Near that century's end, all Europe's ears were tickled by the news from Russia of an elaborate deception practised on Catherine the Great by her lover Gregory Potemkin, governor of the Crimea and other lands newly taken from the Turks. War had ravaged these areas, but when the empress went to tour them in 1787, she passed through apparently prosperous villages which in fact were mere facades erected by Potemkin. A new phrase, "Potemkin villages", came into use as a label for almost any kind of pretentious fakery.

Do we never learn? These last months of the millennium have seen governments, institutions and companies paying out billions of dollars in hopes of saving their information systems from collapsing when 2000 dawns. Paying out to whom? As the London *Times* put it:

If there were any justice, the computer industry should fix the millennium bug without charge. After all, they caused it. The main financial institutions in particular have been spending huge sums. In many cases, they have rehired the very engineers who caused the problem...

Mankind enters another millennium laden with memories of Erik the Red, John Blunt and Ivar Kreuger, of Chaucer's Pardoner, L. Ron Hubbard and many more; of bloodstained slogans such as "Liberty, Fraternity, Equality" and "Joy through Work"; of prophecies such as Neville Chamberlain's "peace for our time" and the "permanently high plateau" on which an eminent economist saw stock prices ten days before Wall Street's great crash in 1929. As the new millennium arrives, what con-artists with what tricks await us after January 1st 2000?

Or should that read "2001"?

Millennium issue

The workshop of a new society

Dec 23rd 1999

From The Economist print edition

The industrial revolution gave an utterly new shape to Britain's economy, its population, its cities and its society. But not quite as fast as is supposed

1670–1850

BRITAIN'S industrial revolution was more than that. In most senses, it was a revolution of society too. A mainland population of maybe 6m-7m in 1700 was put at 10.7m by the first official census in 1801, 20.9m in 1851 and 37.1m by 1901. A nation of countrymen went to town. Agriculture's share of male employment fell between 1700 and 1850 from about 60% to about 25%; industry's rose from under 20% to around 50%. And as industrialists built steam-powered factories near the markets, the one Briton in six living in town in 1700 became by 1850 one in two.

The industrial change, however, was neither as swift nor as complete as is often thought. Tradition describes a roaring take-off between 1770 and 1830, driven by a handful of technological innovations, such as textile machinery and James Watt's improved steam engines; and, hey presto, Britain is "the workshop of the world". In fact, the process had begun in the 17th century and was still incomplete in the 1830s, by when only a few industries—mining, metal-working, textiles, brewing—had taken to "factory" methods.

Technological change, important as it was, was not the be-all and end-all. Nor yet did it start with the machine-builders. They depended on earlier advances in iron technology that enabled that industry to produce, in quantity, better and cheaper iron goods such as components for the new machines or for structural use. And, from around 1670, other factors were at work.

One was the development of coal as a fuel, as the cost of wood rose. Next, the growth of thriving rural industries, supplementing farm incomes, which laid the basis for a skilled industrial workforce. Third, the increasing commercialisation of manufacturing, to meet rising demand for cheaper cloth and metal goods from the growing urban elites in Britain and mainland Europe, and from British colonies.

Britain was helped too by easy access to the sea, political stability and light regulation of trade, finance and industry. It also developed a highly specialised workforce, speeding up the development of new products and processes. Industrial output, according to one modern estimate, rose by 0.7% a year between 1700 and 1760, by 1.3% in the 1760s and 1770s, 2.0% in the 1780s and 1790s, and 2.8% between 1800 and 1830.

Work changed, and more than that, as manpower and water power gave way to steam and machines, and rural craftsmanship to urban factories manned by unskilled labour. For some, work vanished. Rural weavers put up a desperate fight for their jobs, marching, petitioning Parliament and burning mills and machinery such as Daniel Burton's textile factory in Middleton, Lancashire, in 1812, but all in vain.

The new factory workers who took their place were mostly unskilled, and earned less than the craftsmen had. Yet for the many men, women and children who flocked to the factory gate, the pay on offer was better than they had earned as farmhands or servants. And as one skill died, new ones were needed: those of tool- or machine-builders, or—almost a new class—foremen.

One aspect of factory life was universally hated by the workforce. Considerations of productivity and safety led employers to regulate all aspects of life in the factory: working hours, breaks and movement inside "the works". Many workers resisted what they saw as infringements of individual freedom, and some of the traditions of the small workshops survived for a while. Employers had to fight hard for the demise of "Saint Monday", when men went to the pub after work on Saturday and did not return until Tuesday morning, disrupting production in spite of (or by) their frantic efforts to catch up by the end of the week.

The clergy and the good-hearted middle classes worried much about their inferiors' morality, as men and women in the mass flocked into the new workplaces. Some industrialists tried to prevent workmen entering parts of the factory where women worked—without much success. In time, awkward-squad parts of the middle class began to worry about the employers' social morality too: Mrs Gaskell's "North and South" offers an early illustration.

Outside "the works" too, conditions altered greatly. Overcrowding, in jerry-built housing in the much-polluted new towns, brought ill-health; at its worst, the devastating cholera epidemics of 1831-32, 1848 and 1854-55. Despite efforts by some employers, charities and eventually local authorities, improvement was slow before the end of the 19th century. Yet a new, mass urban society was born, and not all of its life was the misery depicted by writers from Dickens to D.H. Lawrence. Our deprived Victorian ancestors were quite good at enjoying themselves.

The most obvious beneficiaries of the industrial revolution were the new "barons" such as the Whitbreads in brewing, the Guests in iron or the Strutts in the cotton industry. But the landed classes too profited, from mineral royalties, rises in urban land values and their own investment in industrial concerns. The greatest gainers, though, were the working class, whose living standards rose from 1820 onwards, after 70 years of stagnation. This rise accelerated between 1870 and 1900, when real wages, consumption and life expectancy all rose sharply.

Simultaneously, new forms of leisure emerged, which became synonymous with the British working class: football matches, social clubs, seaside resorts. By 1900, the ordinary Briton was better paid, fed, clothed, housed, educated, perhaps amused and certainly better represented in politics, than his forefathers could have dreamed of.

Not everyone was content. Lawrence was soon to pour out his ample bile on the machine world. In 1933, J.B. Priestley lamented that it was "as if the country had devoted a hundred years of its life to keeping gigantic sooty pigs. And the people who were choked by the reek of the sties did not get the bacon." Actually, they got quite a lot. Whether that was a fair share is a separate story.



Millennium issue

New society, new voices

Dec 23rd 1999

From The Economist print edition

1836

WHEN “The Pickwick Papers” made its appearance in 1836, a new kind of English fiction had been born. With the young Princess Victoria’s accession only months away, this fresh voice—called “Boz”, but soon revealed as that of a 24-year-old journalist named Charles Dickens—was pitched exactly to catch the quickening mood. For 20 years the English novel had drifted, failing to reflect the nation’s profoundly changing social, political and economic landscape. Enter Mr Pickwick and his friends.

As first presented, there was nothing new or promising about “Pickwick”. It was to be put out in monthly parts. Dickens had been hired to write copy to fit round a series of sketches by Robert Seymour, the leading illustrator of his day. The subject of the mainly visual narrative was to be a hackneyed one, a group of London bloods trying their clumsy hand at country pursuits. But a few months into the project Seymour killed himself. Dickens, who had been chafing at the bit from the start, took charge.

Now “The Posthumous Papers of the Pickwick Club” became story-led and text-led, with the pliable “Phiz”—Hablot Knight Browne—providing illustrations in response to Dickens’s narrative. That narrative turned out to be revolutionary. Although it clearly drew on an earlier picaresque tradition, Dickens packed it with quite new sounds and sights, replacing the steady measure and polite distance of the 18th-century novel with something altogether more dynamic and demotic.

The central spine of the story—Mr Pickwick and his friends on a fact-finding mission to discover the English spirit—split and split again into a web of tales, each told in a different voice. And those voices were quite unlike any previously heard in the English novel; quirky, slangy, minutely right. Monthly publication, still an innovative strategy for new fiction, allowed Dickens to make up-to-the-minute references to public events and private moods. The reading public could see its own life—sensation and urban squalor, the tedium of stagecoach journeys and provincial tea-parties, the follies of the hustings and the law, the debtors’ prison—set down in print.

Everyone read “Pickwick”. Lords, lawyers and doctors bought each new episode as it came out month by month. The less well-off waited until they could get it from the circulating library. Others hung around shop windows, trying to guess the progress of the tale by the puff on the cover, while those who could not read begged others to give them a clue. Sales were huge. The publishers distributed a cautious 400 copies of the first instalment. By the end, 20 months on, they were selling 40,000.

This creation of a national readership for the work was not due to Dickens alone. Improved technologies meant that each monthly instalment could be put together and sold for the relatively low price of a shilling (about 40% of a London labourer’s daily wage at the time). Much improved roads and burgeoning lending libraries brought the work rapidly to potential readers. And there were plenty of these, thanks to the rise in literacy. They were accustomed to “penny dreadfuls”; but here—for many, perhaps, for the first time—was a piece of genuine literature that was just as lively, and just as down-to-earth.

“Pickwick” was a turning point for Dickens too. It took him from lively hackdom to something he had always wanted—the status of an accepted writer. Yet he had not had to give up his existing strengths and skills along the way. “Pickwick” depends on the conceit that its hero and his friends are filing reports on their travels around

the country, with Boz as their editor. Dickens's observant eye—and his shorthand— helped him catch the oddities of real life and reproduce them on the page. Here was the craft of the reporter raised to the highest levels of the writer's art, to give the new Britain its first truly popular great novelist.

Yet still a reporter. Dickens is (and was) often accused, rightly, of shameless sentimentality. But here, vividly drawn, was British society in transformation; and "Pickwick" or, later, "Hard Times" says, and said, as much about that process as would Engels writing on "The Condition of the Working Class in England in 1844".





Millennium issue: Domesday Book

It’s the king’s land, OK?

Dec 23rd 1999

From The Economist print edition

1086

THAT new year’s day, in 1086, found William the Conqueror in a reflective mood. The luxuries of Christmas with his Norman courtiers in the Gloucester residence of the Anglo-Saxon kings were behind him. He settled down for a deep discussion with his council about the country he had won at the battle of Hastings almost 20 years before. Then he sent out commissioners into every part of England south of the river Tees to record the land and its resources, and discover to whom these belonged.

The result can still be seen, over 900 years later, in the Public Record Office in London. Written on parchment in Latin shorthand, it records the results of an unprecedentedly thorough nationwide investigation. The commissioners heard sworn evidence from witnesses in every “hundred”—the smallest unit of local government. This evidence was checked by inspectors sent incognito from other parts of the country. The final document was transcribed by a single clerk.

But why was this mammoth exercise carried out, and why then? There is no overt record of William’s motives. But one reason was plainly money. William had spent the years since Hastings in almost continual warfare, putting down revolts, repelling foreign invaders, or attempting fresh conquests in Scotland and France. Shortly after Christmas 1083, he had imposed his biggest-ever tax to pay for his large army, raising over 20,000 pounds of silver. In the winter of 1085, he mobilised an even bigger force, but was forced to disperse it and billet it across the country, possibly a sign that he was short of ready cash. So he needed to know the taxable capacity of his kingdom, and whether the royal take could be increased.

Such attempts were not new: there had been a survey by the early Anglo-Saxon kings, and another under Alfred in the ninth century. But the passage of time had made these unreliable guides, and much property was exempt from tax. So the commissioners asked not only about “hides”—the Anglo-Saxon land units of supposedly similar taxable capacity—but details of the things that made land productive: livestock, ploughs, mills, fishponds, manpower. Many estates had suffered in the violence of the Norman conquest and its aftermath. So officials asked not just about current property values, but about the usually higher values of 1066.

Another possible explanation of the Domesday survey is more directly military. William had had to fight not just to win his throne but also to keep it. By 1086, the native Anglo-Saxons posed little danger: they had been pacified in the brutal campaigns of William’s first five years as king. But the Danes were threatening an invasion, and William’s son, Robert Curthose, had rebelled twice and was still at large. William himself was preparing to leave the country to campaign in France. So it would have been useful for him to assess the strength and allegiance of his own war-like barons.

In support of this interpretation, it is notable that Domesday emphasises the feudal countryside rather than the more independent towns: London and Winchester, then England’s biggest cities, are not covered at all, a strange omission if the survey was concerned solely with tax.

But the survey also served the barons. Here was a land register, cementing the wholesale changes in land ownership that had taken place since the conquest. Domesday Book records that barely 5% of land by value remained in English hands. Just over a quarter was owned by the king and his officials, and as much again by

the church, leaving around 40% in the hands of 170-odd Norman barons. Domesday Book both legitimated these land-grabs, some of them dubious even in Norman terms, and tied the barons more closely to the king who thus validated and ensured their property rights.

Whatever William's motives, it was this function of the book that gained it its enduring nickname. According to a 12th-century treasurer—the chancellor of the exchequer of his day—people called it the Domesday Book because its "decisions, like those of the Last Judgment, are unalterable."

Millennium issue

Those unknightly Irish

Dec 23rd 1999

From The Economist print edition

1394

AS FEW Britons have ever been told, and not even all the Irish remember, Britain's wretched imbroglio in Ireland goes back far earlier than the atrocities of Oliver Cromwell. Witness Jean Froissart, a Franco-English knight and chronicler, on Richard II's expeditionary force of 1394-95:

Ireland is a land of wild terrain—tall forests, stretches of water, peat-bogs, uninhabitable areas. You can't tell how to make war on the Irish, because there are no towns, nobody even to challenge, if that's what they want. They gather in the woods and forests, where they live in trenches dug under the trees, or among the bushes, like wild animals. When they hear that you have come to attack them, they gather in several places by different paths, so that you can't get at them. But when they see their chance, they have the advantage in attacking you, because they know the country and they are very skilled. No mounted soldier, however good his horse, can ride fast enough to stop them catching him. They spring from the ground on to the horse, put their arms round the rider from behind and pull him down. Or they stay up on the horse and grip him so tight that he can't defend himself. They use sharp knives, with a broad, double-edged blade, like a spearhead, and they never reckon a man dead until they have cut his throat like a sheep, slit his belly and taken his heart out—to eat as a delicacy, say some people who know them. They never take prisoners for ransom, and when they see they are coming off worst, they scatter into the woods, or into holes in the ground, so you can't tell where they've gone.

And what kind of people are these Irish?

Very dour, rough and proud. They set no store by the graces of life, nor by any gentleman. Though their country is ruled by umpteen kings, they don't want to know about civilised behaviour. They'd sooner stick to the rough habits they're brought up with.

Now why ever could that be?




Millennium issue: Church and state

Monastic error

Dec 23rd 1999

From The Economist print edition

DEATH in those days was the usual price for defying kings, and late in 1539 three abbots paid it. Their crime? Refusing to surrender their abbeys to the crown. In Glastonbury, on November 15th, Richard Whiting and two of his monks were tied to hurdles, dragged by horses up Tor Hill and there hanged, drawn and quartered. The abbot's head was set up to adorn the abbey gate, and his limbs put on show in nearby towns. On the same day, Hugh Faringdon was put to death in Reading. The next month, Colchester's John Beche was executed.

1539

This bloodshed notwithstanding, Henry VIII's dissolution of the monasteries went with remarkably little fuss. The three abbots were the only ones to die rather than give in. In the space of four years, the dissolute, pig-eyed, determined king once named by Rome "defender of the faith" smashed clerical institutions that had stood for centuries.

Yet what, exactly, did the dissolution of the monasteries signify? It meant worse poverty for some: the distribution of food, or "orts", at Reading, for instance, had been a regular event. It meant upheaval for many, especially nuns, who were put out into the world but forbidden to marry.

Against that, most of those who left the monasteries got a pension; heads of houses got plenty. For the monasteries' many tenants, their passing meant little more than a change of landlord. The monasteries may not, in fact, have been missed that much. And their swift removal illustrates how easily royal power, by the 1530s (as earlier in France), could over-ride that of the church.

The last of the monasteries was closed early in 1540. A decade before, for all the winds of Reformation blowing from Germany, the church in England, as in most of Europe, recognised the pope as its head, as it had for centuries. Then came Henry VIII's bid for a divorce from his first wife, Catherine of Aragon. It was not forthcoming; and Henry broke with Rome. The king appointed himself "supreme governor" of the English church. His chief minister, Thomas Cromwell, became "vice-gerent", overseeing it on his behalf. Those who did resist the king's supremacy in mid-decade, such as Thomas More, Bishop Fisher of Rochester and London's Carthusian monks, were put to death. But like the executed abbots, such brave or unwise men were exceptional.

After Henry died in 1547, he was succeeded by his three children: Edward VI (1547-53), Mary (1553-58) and Elizabeth I (1558-1603). England swung towards Protestantism under Edward; Mary was fiercely Catholic; Elizabeth, a Protestant, completed the rejection of Rome. Knowing the outcome of this struggle, it is tempting to see the dissolution of the monasteries as a step along an inevit- able path. But in 1539, there was nothing inevitable about Protestantism's eventual success—and the fate of the monasteries in fact made little difference.

For a start, neither Henry's break with Rome nor the dissolution had much to do with religion. The first was a political act, the second mainly financial. True, Cromwell had a deep dislike of monasticism, and leaned towards Protestantism, as also did Thomas Cranmer, the archbishop of Canterbury. Cromwell's report on the religious houses in 1535 had offered plenty of evidence of unseemly goings-on. But there is little doubt that, like any minister today, he saw what he and his master wanted to see, and exaggerated it. If their inmates were so depraved, why close only the smaller houses in 1536, leaving the large ones till three years later? The

monasteries' fate was sealed by the needs of the royal treasury and their own wealth in land, not their poverty in morals.

Nor yet any excess in their zeal for Rome. Henry was no Protestant. Granted, in the late 1530s Protestant tints did appear in religious life. Parish churches were ordered to acquire English bibles for public reading; and an official version appeared with the king's image on the frontispiece. Yet in the very year that he had the greatest monasteries dissolved, Henry reasserted Catholic doctrine and had Protestants burned as heretics. The "Act of Six Articles" reaffirmed that priests should be celibate—prompting Archbishop Cranmer to send his wife, always a well-hidden woman, out of the country. The act also declared it heresy to deny, as some Reformers did, the church's dogma of "transubstantiation", the belief that in the eucharist the bread and wine become the very body and blood of Christ.

Under Henry, in other words, England had Catholicism without the pope. It was the reign (and the personal beliefs) of Elizabeth I, and the foreign challenges she faced, that were to change that. Yet the fate of the monasteries symbolised something important; not a change of faith, but an abiding English reality, the subordination of spiritual power to temporal. The true English churchman was neither Bishop Fisher nor the Protestant Bishop Latimer, burned under Mary's gruesome misrule, but the mythical Vicar of Bray a century later, who changed his views with every change of government.

Millennium issue

The English

Dec 23rd 1999

From The Economist print edition

SOMEHOW, not everyone, over the centuries, has shared the Englishman's esteem for himself and his country. Witness:

1348, the Scots, reported by an English chronicler:

Hearing of the dreadful plague [the Black Death] among the English, they suspected it was due to the vengeance of God.

1630s, Maximilien, Duke of Sully:

The English take their pleasures sadly.

1652, French cleric Jacques Bossuet:

1786, French aristocrat Count Honoré de Mirabeau:

English generosity! They calculate everthing, even talent and friendship; most of their writers have almost literally died of starvation.

1815, Italian neo-classical sculptor Antonio Canova:

Englishmen see with their ears.

1853, Russian liberal Alexander Herzen:

Woe to him who seeks to learn good manners from Englishwomen—or their husbands.

1914-18, German General Max Hoffmann:

[English soldiers]—lions led by donkeys.

1932, Indian leader Jawaharlal Nehru:

The British empire is often compared to the Roman empire—usually by the English, to their own great satisfaction. There is one other strong resemblance between the Romans and the English: they are both singularly devoid of imagination. Smug and self-satisfied, convinced that the world was made specially for their benefit, they go through life untroubled by doubt.

Not to add the proverbial "land without music" but of "60 religions and one sauce". For the record, the next victims of the Black Death were the Scots; Herzen was writing from refuge in, yes, England; the donkeys won; and among Nehru's good friends 15 years later was the last viceroy of India—who fitted his bill almost exactly. No matter, on to:

1822, English essayist William Hazlitt:

A rather foul-mouthed nation.

1961, John Osborne, decidedly foul-mouthed English playwright:

Damn you, England.

Millennium issue: Uniting the kingdoms

Some Scots say yes

Dec 23rd 1999

From The Economist print edition

1707

TODAY it is a small stone outhouse with boarded-up windows in a car park at the rear of the Edinburgh University building. Yet there the lord chancellor (prime minister) of the Scottish Parliament and his officials fled to escape an angry mob and put their final signatures to an act causing Scotland and England to "be United into one Kingdom by the name of Great Brittain."

Had the mob caught the politicians and prevented the union in 1707, most Scots would have applauded. They believed that England had gained a great deal and Scotland little, save for those parliamentarians and other nobles whose debts were paid off by the English government. The later verdict of the poet Robert Burns, that Scotland had been "bought and sold for English gold" by "such a parcel of rogues in a nation" was still current in Scottish political debate three centuries later. Yet this was the least of the reasons for the union.

Over the preceding half-century, Scotland had been steadily growing poorer. First, climatic change, which affected most of the northern hemisphere, caused periodic crop failure and famine, especially in the 1690s. Second, England's wars with France and consequent naval blockades of French ports had disrupted Scottish trade. Third, mercantilist attempts to secure domestic markets for domestic products saw tariff barriers raised across the continent, hitting Scottish exports of coal, salt and linen.

And fourth, there was the folly of the Scots themselves, who, in an effort to join the imperial fashion, had raised and promptly lost a fortune in a doomed colonial adventure at Darien, in Central America. This was catastrophic, for the sum wasted represented between a third and a half of the available capital in Scotland. These were the debts paid off by the Act of Union; a small price, thought Queen Anne, for the permanent appeasement of her troublesome northern subjects that would enable her and her successor's ministers to give full attention to fighting the French without worrying about a possible backdoor invasion.

In truth, the union of 1707 was the logical end-point of a process begun in 1603, when the two crowns were united and King James VI of Scotland became King James I of the British Isles. He and his successors centralised much of the power of government in London—where, to increasing Scottish irritation, most of it was to stay until 1999, when Scotland got back its Parliament and a "first minister" with wide powers.

That union of the crowns had already had one dire effect, though just how dire was not to be seen until the 19th and 20th centuries. James I—the James who authorised the great translation of the Bible—was fiercely anti-Catholic, and recruited Protestants from Scotland, far more so than from England, to settle on land in Northern Ireland from which Catholic families had been removed. The union of the new "Great Brittain" with Ireland that was to follow in 1801 was doomed before it was signed.

Yet both Scots and English gained from the 1707 union of the kingdoms. The Scots got free trade with England, and their trade elsewhere flourished under the protection rather than the hostility of the Royal Navy. Scottish industry prospered as the British empire did—an empire much of which was Scottish-built: about a quarter of the Britons in 19th-century India were Scots (witnessed even now in such place-names as Macleodganj and Campbellpore), and a Canada without Scots in that century might well today be a largely French-speaking one.

The union had more subtle influences on a wider historical stage. The English were already settling America. But the influence of Scottish settlers far outran their numbers. They brought their education: the founders of William and Mary College, in Virginia, in 1693, and those of what were to become the universities of Delaware, Pennsylvania and Princeton were Scots. They brought too their belief in theories of natural law and rights, which infused much of the sentiment behind the future United States' Declaration of Independence.

This intellectual revolution had a big effect in Britain too. Scotland had been a small country powerless to retaliate against larger ones' economic nationalism, and the change in fortune that came with the union may have been one spur that led two Scottish thinkers, David Hume and Adam Smith, to propound the virtues of free markets and free trade; arguments whose intellectual force in time would help to destroy the English mercantilist tradition.

Here *The Economist* must declare an interest. Without the union, it is unlikely that James Wilson, a hat maker from Hawick, in the Scottish Borders, would have been able to move so easily to London in 1824. And without the foundations of free-marketry laid by Scottish thinkers, which he keenly espoused, and the wide British political platform created by the union, Wilson certainly would not, in 1843, have started a weekly newspaper called *The Economist*.

Millennium issue: The franchise

Democracy, one day

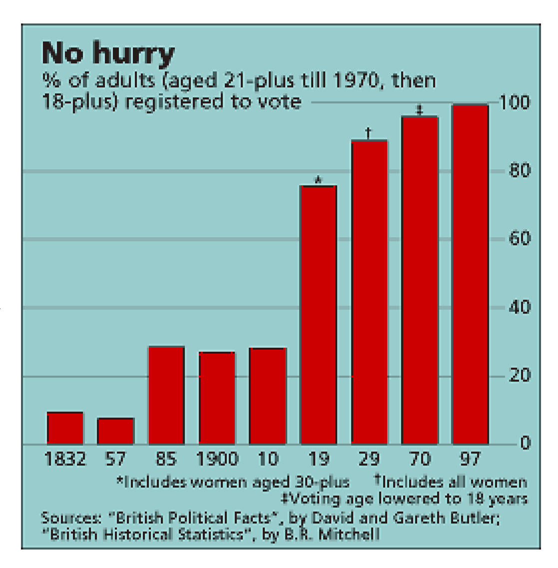
Dec 23rd 1999

From The Economist print edition

1832

IT MUST, said Earl Grey, whose Whig government introduced the bill, be "a measure large enough to satisfy public opinion and to afford some ground of resistance to future innovation." It was, said Lord John Russell, its greatest supporter, "the final solution" to a great constitutional question. To the contrary, railed the Duke of Wellington, its diehard Tory opponent, "because of the exorbitant increase in the democratic element of the British constitution, it could not fail to advance with augmented and accelerated force, till all other powers being drawn within its vortex, the government would become a mere democracy."

In this regard, if in no other, history proved the opponents of the great reform bill of 1832 right: it did indeed lead to "mere democracy", though it took its time. Further acts to extend the franchise followed: in 1867, in 1884 and, notably, in 1918, when nearly all property qualifications went out.



The Reform Act itself was scarcely revolutionary. True, Old Sarum, whose seven voters returned two members of Parliament, was abolished; as was Dunwich, half of which was under water, leaving the 14 voters of the other half also to return two members. And the populous towns of the nascent industrial revolution were for the first time properly represented. Yet the measure fell far short of a universal male franchise, while actually abolishing the right to vote that a very few women, in theory, already enjoyed.

Before the reform, roughly one man in ten in England and Wales had the right to vote. Most of them rarely got to exercise it, however, since usually fewer than one-third of the seats were contested. Even after reform, only one man in five could vote in England and Wales, and more than half the seats were still uncontested. Scotland was left with an even smaller proportion of voters, one man in eight; and Ireland fewer still, about one in 20, to keep the Catholics down.

Even those with a vote needed to take care how they exercised it: with the secret ballot still denied, the ruling classes could still cajole, bribe and threaten. After the reform as before, it continued for a time to be mostly landowners who sat in the Commons, since they could leave their estates and farms to be run by agents, in a way that no capitalist dared leave his factory.

No matter: the genie was out of the bottle. Though the bloody revolution that seemed probable when the Lords blocked reform throughout 1831 was averted, the peaceful one rolled on. Russell, whose "final solution" the bill had been, tried and failed to put through a further reform in 1848. The working classes had been deliberately left in the cold by the 1832 law. They were not even offered in 1848, or much later, anything near the universal male franchise that the Chartists of the 1840s had called for. But in time they had their revenge. The "mere democracy" so scorned by Wellington in the early 19th century became the most successful ideology of the 20th.

Not that it hurried, not in Britain. It took the reform of 1918, which nearly trebled the electorate, to achieve almost universal adult suffrage for men, and to give women, till then entitled to vote (under sundry conditions) only in some local elections, a vote for Parliament (also under conditions: they must be aged 30 or more, and either householders in their own right or married to a man with a vote). Only in 1928 did women win their full rights.

Nor till 1999 were most (not all) hereditary peers to be removed from the House of Lords; and even then over loud conservative lamentation. One ennobled historian—yes, really, no hereditary brainless wonder he—assured readers of the *Times* that "birth is a method of selection" (as it is: 15% of fetuses fail the test, though maybe that was not quite what he meant). So Britain's new, smaller House of Lords will at last be democratically elected? Pretty certainly not: its ultimate make-up is yet to be decided, but a majority of its members, quite possibly, instead of the recent 45%, will be the appointees—for life, on today's form—of some past or present prime minister.




Victoria rules

Dec 23rd 1999

From The Economist print edition

NEVER before or since has Britain held the position in the world—and been so self-content with it—as in the later years of the reign, 1837-1901, of Queen Victoria. This was the time of

1887

We don't want to fight, but by jingo if we do,

we've got the men, we've got the ships, we've got

the money too.

It was an illusion: already the United States had surpassed Britain's industrial power, and Germany soon would; and within a year of the quarrel with Russia that provoked these music-hall lines, a large British force was to be wiped out by one of Zulus. Still, *The Economist* of 1887, recording Victoria's jubilee, was right in celebrating

fifty years of national progress and prosperity such as England has never known before.

Not least, this paper argued, in the way manners had softened since the

rough, turbulent and brutal Englishmen of the 18th century... When the Queen began her reign, gentleness of behaviour among the lower classes was a rare virtue. The change has been complete. No one who saw the crowds during the procession could have been other than struck not merely by the good temper but by the civility. No French or Italian crowd could have behaved more politely.

Nay, and soberly too:

Fifty years ago, the richer people would have done all in their power to encourage the poorer to enjoy themselves by excessive drinking. On Tuesday the crowds were as sober as if they had been composed of foreigners.

All this, better manners included, thanks to Victoria? No, we said (as indeed she herself had). But we noted the way

the Queen and her life without reproach in its conduct [have been] made by the nation the symbol of their thankfulness.

Nor were the British (the English, as we persisted in miscalling them) alone:

throughout the world the English race has made it the occasion for rejoicings.

Even Americans, we said complacently,

have done honour to their old home in the person of the Queen [whose] strong influence during the Civil War to prevent our government from embroiling [this] country has never been forgotten... The Queen, as a woman, is as much respected in America as in England.

And in her province of Ireland? To which unfortunate island this paper devoted its immediately following editorial, without noticing any discontinuity.





Millennium issue: Britain's statesman of the millennium?

Churchill at war

Dec 23rd 1999

From The Economist print edition

1914, 1940

BRITAIN'S war leader of the 1940s, Winston Churchill, was a man of contrasts: a master of the stirring phrase and of wild misjudgment; a democrat unable to see that Britain's colonial subjects deserved democracy too; a has-been (even, at times, in his own eyes) for years, and then, suddenly, in 1940, the only credible prime minister; deeply distrusted for most of his career by other politicians, inspirer of intense loyalty among his overworked staff; decisive, yet a poor manager of his cabinet; far-sighted and effective in his view and practice of global diplomacy, stubbornly wrong-headed at times about military strategy; winner of the most crucial war in Britain's history, only, as he wrote bitterly in his memoirs, even before it was over to be "immediately dismissed [in the mid-1945 election] by the British electorate from all further conduct of their affairs".

In his youth, in India, Sudan and the Boer war, Churchill had been a daring officer and war correspondent (both together, at times). The first world war showed him, first lord of the Admiralty (navy minister) from 1911 to May 1915, at his worst. As *The Economist*, no admirer of his jingoism at the time, recorded in September 1914:

On Monday Mr Churchill declared that "if the German fleet did not come out and fight, they would be dug out like rats in a hole." The following morning a flotilla of German submarines, unfortunately, responded to the challenge and surprised three of our large armoured cruisers... Within two hours all three had gone down.

Far worse, in 1915 he—as much as anyone, though not alone—was to inspire the landing on Turkey's Gallipoli peninsula, a typically Churchillian sideshow that ended wretchedly for navy and army (notably, many Australians and New Zealanders) alike.

He was to be proved entirely right in his distrust of Hitler's Germany in the 1930s. Yet those earlier events were curiously paralleled in the second world war: two British capital ships, without air cover, sunk by Japanese aircraft within days of Pearl Harbour; an expeditionary force—diplomatically honourable, militarily mad—sent to Greece in 1940; later, Churchill's remarkable belief that the long, often mountainous, Italian peninsula was "the soft underbelly of the Axis". At times, he drove his military chiefs to despair: how was the war to be won with a man of such random, impish, headstrong energy in charge?

No real answer, but a fair one, as they knew, was that, without him, in 1940-41 it might well have been lost.





Millennium issue: BAGEHOT

The end of the king—and kings

Dec 23rd 1999

From The Economist print edition



1649 IT HAS been an extraordinary week. Here in our tower above St James's, just across the royal park from Whitehall, where the execution took place, Bagehot has been surprised by the popular response, and his own. Terrible though the recent wars have been, setting Englishman against Englishman, the deliberate execution of a king—carried out as if in slow motion on a chill morning outside the Banqueting Hall—was even more affecting. There was no rejoicing among the crowd, only a sense of a necessary deed having been conducted with proper dignity. Even Charles played his part well. This most flawed of monarchs met his end calmly (though not, of course, with the slightest show of contrition). At least the executioner had the good grace—and good luck—to achieve his work with a single blow. But still. An unidentified man in a mask severs the royal head; another waves it aloft: the scene on the black-draped scaffold might have been expressly designed to drive home to those who witnessed it the enormity of the act of regicide. Any nation that separates the head of its lawful king from his body had better be sure that it did so with good cause, and with a clear view of what it means to do next.

Was there just cause? There was

Was there just cause? There was. It is after all only a year since both Oliver Cromwell and Henry Ireton were bending over backwards to find some sort of settlement that would preserve not only Charles's life but also his office. There has never been a strong desire in this country to kill him. Many people accept that some of the king's motives—such as his desire to steer a third way between the tyranny of popery and the perils of Puritanism—were sincerely held. But Mr Cromwell put it well when he told the Commons not long ago that "providence and necessity" had in the end forced the king's opponents to seek his head. Providence, because Charles's decision to plunge the country into a second civil war was a treason against God. Necessity, because although given every chance to settle, he showed that he could never be trusted. His flight from Hampton Court and subsequent attempt to use Scottish pikes to impose that nation's Presbyterianism on his English subjects were simply the final straw.

Besides, execution was not settled upon lightly. The king had a fair trial, in full public view, in front of 150 commissioners—all sound men drawn from the Commons, the army, citizens of the City of London and some fine country gentlemen. He did himself no favours by refusing to accept the authority of the court. But even if he had condescended to offer a defence, the verdict must surely have been the same: guilty as charged of "high treason and high misdemeanours". No other single man bears as much blame for this past decade of battles, sieges, plague, rebellion and hunger. Many tens of thousands have perished in battle (and far more than that, some say, in consequence of it); taxes have risen sevenfold since the 1630s. Little wonder London has seemed so quiet this week. Its people know that it is a grave thing to kill a king. But they know too that Charles was not just unfit for his office, but unworthy of it—as he has been rightly described, "a man of blood".

So what next? If it was right to kill King Charles, it is right to stop Prince Charles becoming king in his father's place. That should not be difficult. The only way in which this tainted 18-year-old can ever hope to ascend the English throne is to do so at the head of a Scottish army—and the New Model Army, for all its recent internal troubles, can no doubt make short work of any such threat.

The question now is not whether it was right to kill this king. It is whether England needs any king

The question now is not whether it was right to kill this king. It is whether England needs any king. Bagehot in past columns has questioned the feasibility of abolishing the monarchy. After all, the Commons did not raise a great army to remove the monarchy, but to restore its own trampled rights. Even now, after Colonel Pride's helpful purge, many a royalist still sits in the depleted rump of the House. Abolition would worsen relations with many across the Channel who are already horrified by the English regicide. Even at home few ordinary people favour abolition. And scrapping the monarchy might boost the Levellers and other extremists, just when the public has begun to recognise their equality-mongering as the dangerous nonsense that it is.

And yet, and yet. Any nation that has had the courage to force a tyrannical monarch to submit to the laws of God and of man has crossed a watershed. And although it is natural at such a time for the common crowd to shrink back, Parliament's duty is to press on. If good is to come from all the recent horror, it ought not to be merely the removal of one bad head from one bad king. The very doctrine of government which set that man in authority should be put on the scaffold too.

The very doctrine of government which set that man in authority should be put on the scaffold too

Perhaps it was Charles himself who—albeit unwittingly—put best the case against the monarchy. He did so when he asked at his trial by what authority he had been called before the court: "England was never an elective kingdom, but an hereditary kingdom for near these thousand years." Quite so. And England has over these past ten years paid a most heavy price for this ancient custom, which enabled a traitor and enemy of the nation to pretend to be that same nation's king. It is time to be free of it. A draft bill already doing the rounds at Westminster decrees that "the office of a king in this nation shall not henceforth reside in or be exercised by any one single person." Excellent; the House of Commons should enact the bill at once—and get rid of the House of Lords while it is at it.

Some may ask: "If the monarchy goes, what is to prevent Parliament itself becoming as much of a tyrant as the late king?" The answer is simple: a great new army, infected with the same love of law and liberty that nerved this country to enact this week's fateful execution in Whitehall. England is not like other countries, especially now. It is easy to see that, even 500 years hence, France will still be in thrall to a king. But England? After this winter week of 1648-49, there will surely be no king in England—not ever again.



Millennium issue

Attempted suicide

Dec 23rd 1999

From The Economist print edition



The first world war was a disaster that need never have started, could have been stopped, and led straight to even worse disasters

1914–19

IN THE summer of 1914, the rulers of Europe, after a century of huge economic progress and a decade of rising tensions, marched their peoples, the boss-eyed leading the blind, to the brink of collective suicide. The "great war" was to kill over 8m combatants. Lions led by donkeys, said a German general of the British troops; sheep led by abattoir operatives, he might better have said of every warring nation, not least his own. Worse was to spring from the war: the Soviet and Nazi regimes, and a second war, greater still, in which civilians too were routinely slaughtered, in horrors exceeded only by the mass murder of the Holocaust. And none of it need have happened.

The spark for war was the murder, in June 1914, in Sarajevo, part of the Austro-Hungarian empire, of the heir to the throne. The killer was a Bosnian Serb. So Austria, already at odds with Serbia, takes the opportunity—four weeks later—to send it, with German backing, a brutal ultimatum. Serbia gives way. Not enough, says Austria and declares war. Russia (then including much of today's Poland) threatens to mobilise its armies, but only against Austria. Even that means war with us, says Germany. Russia mobilises in full. So does Germany, planning a first strike, through neutral Belgium, at France, formally allied with Russia since 1894. German troops enter Belgium. Britain, hanging back so far, despite secret commitments to France, joins in. Crash.

Millions of deaths, and words, later, historians still have not agreed why. Logistics, says one theory of the last crucial days of peace: Russia's plans for a total mobilisation would be wrecked by a partial one; there would be chaos if Germany's troop trains, once moving west, were halted. Or so the generals said, and the civilians gave way.

But the deeper reasons? Germany, a country on its way up, feared "encirclement"; it had become notably militaristic under its coxcomb and much-uniformed Kaiser Wilhelm II; and it resented being patronised (and largely shut out of empire) by the self-satisfied British, on their way down, and the despised French. France had no zeal for war, but detested the neighbours who had humiliated it in 1870-71. Britain disliked Germany's start on a navy to rival its own; it had slid in 1904 from its old isolation into an *entente* with France, leading to military talks concealed even from the cabinet; and its foreign ministry was full of anti-Germans, headed, for ten years from 1906, by a minister who largely shared their view. Pro-French sentiment was aided too, till his death in 1910, by King Edward VII, an obese but skilled pursuer of game birds and other men's wives—and no less popular or persuasive for it.



Blame for the war is usually laid—with the lion's share for the kaiser and his general staff—on this Anglo-German rivalry, abetted by the jingoism of press, professors and public opinion in both countries. That view may be a little too kind to Britain's Germanophobes. But it is vastly too kind to those who actually began the thing. Austria, ruled (since 1848, no later) by its once sensible Franz Joseph II, was actively eager for war. Tsar Nicholas II, given his status and role in Russia, could have restrained his too confident soldiers; this last, dim, feeble scion of an ugly dynasty argued, but did not overrule them. Both dynasties got what they deserved.

Their peoples, and others, got far worse. So did the Turks, inveigled in by Germany; the Italians, lured by British promises of Austrian territory, and even a few Portuguese; plus huge numbers from Britain's loyal empire, even from uneasy India; and, in 1918, Americans. Whoever began it, all the belligerents conducted the war like lunatics. The battlefield slaughters are notorious; less so, yet still more criminal—killing, after all, is the general's trade—was the Allies' rejection of efforts for peace, promoted by America, the pope and, several times, Germany. No country's generals wanted a halt. But the Reichstag in mid-1917 voted by two to one for "a peace of understanding and reconciliation". The few Britons who dared even to think that way were treated almost as traitors.

And so to Allied victory, peace—and, in 1919, the final crime, the Treaty of Versailles, whose harsh terms would ensure a second war, and were condemned for it, by a few clear-sighted critics, at the time.




Millennium issue

Tragedy foretold

Dec 23rd 1999

From The Economist print edition

1914

“PERHAPS the greatest tragedy of human history.” That was *The Economist*’s judgment, on August 8th 1914, of the war that Britain had entered four days before. A week earlier, denouncing the “poisonous” efforts of the *Times* and “the yellow press” to push Britain into war, this paper had claimed, with wild optimism, that

in maintaining strict neutrality, Mr Asquith [the prime minister] can count upon the support of the cabinet, the House of Commons and the nation.

No better was our pretence that the quarrel between Austria and Serbia

is no more our [Britain’s] concern than would be a quarrel between Argentina and Brazil.

Yet the judgment which (unabashed) we offered a week later was far-sighted:

Death, anguish, starvation and despair are written over Western Europe... Hell has been let loose...

The longer the war lasts, the more acute will be the [economic] distress and the longer the process of recovery. In the opinion of many shrewd judges, a social upheaval, a tremendous revolution, is the certain consequence.

This paper’s proprietors tolerated its peace-loving editor till 1916; a year before Lenin took power in St Petersburg, 17 before Hitler did so in Berlin.




The centuries of al-Andalus

Dec 23rd 1999

From The Economist print edition

711–1492

AS THE millennium opened, which was the most cultured city in Western Europe? Arguably, Cordoba—Muslim Cordoba. The Arab/Berber force that crossed the straits of Gibraltar in 711 soon reached far into France. Not for long; but in Spain, al-Andalus to its new rulers, Muslim power survived, though repeatedly diminished, until the Christian reconquest of Granada in 1492.

Both sides remember their shared history in Europe as one of conflict. With reason. Arabs landed in Sicily in 703 and ruled it from 902 till nearly 1100. (Hence a modern north Italian gibe: *Q—Why did Sicily get the Nobel peace prize? A—It was the only Arab country not to make war on Israel.)* War won the Turks an empire in south-eastern Europe that lasted into the 20th century. Yet not all, or even most, was violence. Within al-Andalus, even as it splintered internally and was nibbled away by the *reconquista,* for six centuries Christian and Muslim communities—and the many Jews—generally coexisted in peace.

All Europe should be grateful, and not just for the Arab buildings like the Alhambra in Granada that it has inherited. Al-Andalus was famous not only for its textile industry and its advanced agriculture, but for its scholars. Averroes—Ibn Rushd—was born in Cordoba in 1126, an Islamic expert to whose 30 years of study Europe owes much of its rediscovery of Aristotle and Plato. The great Jewish thinker Maimonides also was born in Cordoba, in 1135, though a period of intolerance there forced him first to Morocco and ultimately to Cairo. There he codified Jewish law in his Mishne Torah,and wrote (in Arabic) his classic "Guide for the Perplexed", whose linking of religion, philosophy and science also was to influence medieval Christian scholarship.

Both men were also notable physicians; another field in which Europe had much to learn from its invaders. (Yet another was personal hygiene; so much so that, after the reconquest, visiting the public baths was seen—at times, in some places, banned—as a sign of covert fidelity to Islam.)

Poetry too flourished in al-Andalus. Who better to typify its many-sided society than Samuel HaLevi, later to be known as HaNagid, another Jewish son, a century earlier, of Cordoba; though he too was pushed to leave (by the violence between Arabs and Berbers, not against Jews, that was to end Cordoba's greatest days), and made his career in Granada. In 1027 he was named (or named himself?) *nagid*—prince or governor—of al-Andalus's Jews. Service to successive Muslim kings saw him in 1037 appointed grand vizier of Granada, and for most of the years until he died in 1056, leader of its troops in battle. Yet he was a scholar and a poet too. His verse, suffused with his rabbinic learning, but drawing on both cultures, is one of the jewels of Hebrew literature. Two epigrams can hardly speak for it; but they show a rare realism about his career.

War at the start's like a beautiful girl,

any live man's delight.

And by the end? A disaster, a hag,

regret, repulsion—and flight.

Nor did he put much trust in princes:

Why did he hire you, your master, then?

So you could work, while he earned.

You’re just his tongs. When the fire gets hot,

you’ll be the one that gets burned.

Alas, HaNagid’s distrust was right. Though nearly all the states of al-Andalus, Cordoba not least, had fallen to the Christians by 1250, Granada survived, and indeed flourished; and when Spain’s “Catholic monarchs”, Ferdinand and Isabella, eventually took it over in 1492, they promised freedom of religion. By 1499 they had changed their minds.





Millennium issue: The church and science

Right, for the wrong reason

Dec 23rd 1999

From The Economist print edition

1277

IMAGINE it. A Catholic bishop in a university town goes on CNN one night to condemn a long list of fashionable scientific and philosophical views. Everyone flips channels, even in Lourdes. Full details of all 219 heresies—for such they now are, and anybody caught spouting even one of them faces excommunication—are published on his website. A few surfers download the list and e-mail it to their friends. The London *Times* writes in praise of ecclesiastical eccentrics. The pope transfers this one to Somalia.

In March 1277 in Paris, this, more or less, happened; except that the pope was pleased, dons hastily amended their lectures, and few people dared to laugh. Today, such an act of clerical censorship seems a textbook example of bigotry blocking intellectual progress. But two eminent historians of science, both Catholics, have claimed that Bishop Etienne Tempier's condemnations of 1277 were a crucial stepping-stone on the way to modern science. They are half right.

One of Pope John XXI's problems was that Arab thinkers were belatedly helping Christendom rediscover ancient Greek science and philosophy. The works of Averroes were especially irksome. He argued, basing his views on Aristotle, that both the creation of the world by God and personal immortality were alike impossible. Such pagan ideas, peddled by infidels at that, were gaining ground in Paris and elsewhere. The pope told Tempier to root them out. The bishop and a committee of 16 theologians took just a few weeks to compile a list of 219 forbidden views. Number 152—that theology is based on fables—was clearly annoying. But it was number 147 that really hurt.

It said that if something has been established as contrary to nature, or physically impossible, then not even God can bring it about. This was more than just a denial of miracles. It reflected two basic Greek ideas: that human reason could deduce immutable laws of nature, and that the gods were as bound by these as anyone else. Though Aristotle himself often emphasised that his conclusions about the physical world were merely provisional, his medieval followers went much further on his behalf. They believed he had established many physical laws, so that it was possible to say definitively what God could do, and what not.

In fact, much of Aristotle's physics was wildly wrong. In condemning it, Tempier was doing the right thing for the wrong reasons. By insisting that God had absolute power to do anything He chose—to create many worlds, for example—Tempier and his like prompted Christian philosophers and scientists to explore all sorts of possibilities that dogmatic Aristotelians had ruled out. Plainly, if God could make the world any way He fancied, it would be foolish to rely on the armchair ratiocinations of ancient Greeks to find out what that was. Bit by bit over the next few centuries, savants began to piece together a new physics that dispensed with Aristotelian principles and relied on looking instead.

Thanks to the church? As Galileo later might have said, yes and no. And John XXI? In May 1277, he was killed when the force of gravity brought the papal roof in on him.




Millennium issue: The Black Death

Plague and economics

Dec 23rd 1999

From The Economist print edition

1348

THE plague reached Europe's southern ports from the Crimea, in the winter of 1347-48. The continent had enjoyed some 200 years of prosperity, and then 70 of cold. Result: too little food for too many people. By 1350 one-third of them, especially in the swollen cities, would be dead. You can be rich and die of plague; many such did. But ill-nourishment (swathes of Europe saw famine in the 1340s) surely played its part.

Just what was "the plague"? Boccaccio, who lived through it in Florence, recorded:

first, swellings in the groin or armpits, which sometimes grew as big as an egg or an apple. These spread, then changed into black or purple spots, a few large ones or many small, in any part of the body...infallible signs of approaching death.

Bubonic plague is the usual diagnosis. But the papal physician at Avignon tells of fever, spitting of blood, ulcers, but not of swellings (buboes). And bubonic plague, spread by rat fleas, is normally preceded by the death of hordes of rats (only then do the fleas opt for humans). Yet no one in 1348 recorded this.

Whatever the disease, all who visited the sick man, wrote a chronicler in Flanders,

or do business with him, or even carry him to the grave, quickly follow him there.

The result, in Florence, was that

when the graveyards were full, they dug huge trenches, where they laid the corpses hundreds at a time, stowed like merchandise in a ship...How many grand houses, once full of gentlefolk, were left empty, even of the lowest servant...How many spirited young men and pretty women ate in the morning with their family and friends, and by evening were supping with their forefathers.

In Flanders, travellers found

fields uncultivated, cattle straying without herdsmen, barns and wine-cellars wide open, few people anywhere.

The grandees took refuge in their country houses—it was such a group whom Boccaccio imagined telling each other the tales in his "Decameron"—or hastened to promise propitiatory legacies to the church. They died anyway: England lost two archbishops, and a princess, at Bordeaux on her way to wed the prince of Castile (whose king himself was also soon to die). Of a well-off group who fled to the hills from Bergen, in what is now Norway, only one survived. But the poor took note.

Briefly, their time was to come. As demand for food slumped, so too did farm prices (though those of manufactures rose, as craftsmen died). An English chronicler recorded that in the plague year

a horse once worth 40 shillings could be bought for half a mark [one sixth as much], a fat ox for four shillings [say, a third of its earlier value], a cow for one shilling.

But wages did the opposite:

In the autumn, a reaper was not to be hired for less than eightpence [a day, 50-75% up], plus his meals. So crops were often left to rot.

It did not last: the English government swiftly brought in laws to stop the free movement of farm labour and restore pre-plague wage levels, fining employers who paid more. It half-worked. Food prices rose rapidly; in the 1350s grain cost 30% more than before. Farm wages fell, but still stayed far above past levels (unsurprisingly: not just did the attempt to reverse them defy market realities, but the levels fixed had in some places been surpassed years before the plague struck).

Craft wages and prices remained far higher in England than before. That was true in the cities of mainland Europe too; in Florence they had doubled, a contemporary lamented. Siena's city council felt it worth offering tax breaks to attract incomers.

The surviving rich, by mere inheritance, found themselves richer still (vastly richer, the sole survivor of the Bergen group). So did the church, as gifts and legacies poured in (though in Castile it was made to return some of its gains to the donors). Yet the social shock had been great. Death was never far from medieval man. Yet here was the natural order upset, rich and poor, layman and clergy (monks especially) indiscriminately swept away by the wrath of God.

In some cities, such as Paris, the reaction to random death had been a "why bother?" collapse of morals. There and elsewhere this outlasted the plague. In Florence:

finding themselves few and rich, men forgot what had happened...and took to gluttony, taverns, gambling and unbridled lust.

The counter-reaction was a rush of piety, exemplified in a wave of church- and chantry-building. Yet the church as an institution, already under attack, emerged weakened. Had it saved the faithful? Or even its very own? One-fifth of Pope Clement VI's curia in Avignon was swept away (as was the patriarch of the Russian church).

Did the Black Death lead directly to the French peasants' revolt of 1358 or that in England of 1381, even to the Reformation? Did the shortage and high cost of labour change farming practice and push technology? (Fewer monkish copyists; use a printing press.) Was it the deaths of scholars that led to the founding of several new universities before 1400? All this has been argued; some of it may be right. The 19th-century French historian who saw the Black Death as the divide between the medieval world and the modern had, at least, a point.

In one grim respect there was no division to mark. No doubt the plague was God's judgment, but someone must be spreading it. Yes, them. By early 1348 massacres of Jews had begun, in southern France. Under trial—torture, that is—in Switzerland, a Jewish doctor (ominous words: Stalin was to use them, in the same spirit) confessed to poisoning the local wells. In Basle, Jews were burnt to death; then in Stuttgart, Freiburg, Dresden, Mainz, Cologne and many another German city; in Strasbourg, even before the plague arrived; in Brussels too and even in one or two cities of relatively tolerant Spain.

Most rulers and a few city councils did a little to protect Jews; Pope Clement threatened to excommunicate their persecutors. The Christian mobs, egged on by the bizarre self-flagellant cults that had sprung up, were not listening. In the proportion of people it killed, the Black Death was Europe's greatest known disaster; for one group of Europeans, 600 years later worse was to come.



PRINT EDITION
EUROPE

Millennium issue: Trouble with Turkey

The fall of Constantinople

Dec 23rd 1999

From The Economist print edition

1453

GREEKS still consider Tuesday an unlucky day. May 29th 1453, was a Tuesday; the day that Constantinople, the place they called—and often still call—the queen of cities, or simply "the city" was overrun by the Ottoman forces that had bombarded its mighty walls for the past 40 days.

In the history of warfare, this was a watershed. It proved that gunpowder could batter down the strongest walls enough to let the attackers in; the age of immobile, iron-clad soldiers defending big stone fortresses was over. But far more was over than that.

The Byzantine defenders and their Venetian and Genoese allies had noticed portents since the lunar eclipse a week earlier. An icon of the Virgin Mary slipped from its platform as it was carried through the city; then a thunderstorm halted the procession. As dusk fell on May 28th, the Emperor Constantine warned his subjects they might have to sacrifice their lives for the faith, family, country and sovereign. The clergy—bitterly divided by doctrine, as Christianity's 400-year-old east-west schism deepened—put aside their differences to hold an evening service in Saint Sophia, the greatest church of eastern Christendom.



In the small hours next day, the final assault began, with a deafening noise of trumpets, drums and war-cries. The Genoese ran down to the sea after their commander was wounded; eventually a dozen Greek and Italian ships, laden with terrified refugees, reached the open sea. The besiegers—the irregular, ill-trained bashi-bazouks and the elite janissaries—poured in.

Smashing through the great bronze doors, they burst into the morning service at Saint Sophia. The worshippers were massacred or captured; many priests died by the altar. Later Sultan Mehmet, the impulsive 21-year-old who had flouted all his elders' advice in besieging the best-defended city in Europe, walked into the building and ordered an imam to claim it for the Muslim faith. But he stopped a soldier hacking at the marble pavings: looting—for one day, not the usual three—all right, but not vandalism.

Mehmet also took care to preserve intact the city's second most-important church, that of the Holy Apostles, and hand it to the Greek Orthodox patriarch. Though much misused by the temporal authorities, the patriarchate survived as an institution for administering the Greek and other Orthodox Christian communities in the new multinational empire. As a strange side-effect of the Muslim conquest, the doctrinal integrity of eastern Christendom was preserved: instead of the compromises with the Vatican that might otherwise have been inevitable, the patriarchate was able to hold to its view on the issues, such as the nature of the Trinity, that had led to so much bitter argument.

Nonetheless, the political capital of eastern Orthodoxy moved northwards to Russia, where patriots proclaimed that Moscow had become the third Rome after the conquest of Byzantium, which itself had been known as the new Rome.

The fall of Constantinople brought to a head many trends already under way. One was the slide of the Byzantine empire's power, as the loss of Anatolian lands left it short of revenue and recruits, and thus more dependent on fickle Italian allies; another the flight of Greek scholars (particularly brilliant in Byzantium's final years) to Italy, where they helped to stimulate the Renaissance.

Yet another was the emergent contest in south-eastern Europe between the Austro-Hungarian and Ottoman empires. The Turks were besieging Vienna in 1683 and repeatedly at war with Russia or Austria in the 130 years thereafter. They held southern Greece until 1832, today's Bulgaria, Romania, Bosnia and nominally Serbia until 1878, the lands south of these down to liberated Greece until 1913. Hence the Muslim pockets—Albania, Bosnia—that for most Europeans today are the only reminder that the country they see as a source of cheap, resented, migrant labour was once a mighty power in Europe.

But a part of Europe? Allied with Germany in the first world war, and therefore stripped of their remaining Middle Eastern empire, the Turks by 1922 were strong enough again to drive Greece's troops, and centuries of Greek society, from Anatolia. Old enmities were resharpened by the Turkish invasion of northern Cyprus in 1974. If the European Union still hesitates, despite Turkey's decades inside NATO, about its wish for EU membership too, the real reasons lie centuries deep; not least in 1453.




Millennium issue: Reform and Rome

Luther on the stand

Dec 23rd 1999

From The Economist print edition

1521

THE emperor was there: Charles V, king of Spain and archduke of Austria, elected two years earlier, aged only 19, to head the Holy Roman Empire. There too, at the gathering in Worms, in southern Germany, were the seven princes who had elected him. With them was, not least, the legate of Pope Leo X. Before them stood an Augustinian monk, a 37-year-old professor and theologian at Wittenberg: Martin Luther.

Four years earlier, he had posted his 95 theses on a church door in the city. His target then had been mainly the selling of papal "indulgences"—a let-out for sinners (even, since 1476, those already in purgatory). But by now Luther had widened his attack, challenging papal authority itself. He had already been excommunicated. Charles—not the pope, who thought his own condemnation quite enough—had called the meeting to have Luther put under ban afresh.

For form's sake, Luther was first invited to recant. As expected, his reply was uncompromising: not a word would he unsay,

unless I am convinced by holy scripture, or by evident reason—for I can believe neither pope nor councils alone, since it is plain that they have repeatedly erred. My conscience is captive to the word of God.

It is possible that he never actually pronounced his famous conclusion:

—Here I stand, I can do no other. God help me.

The words appear only in a later published version, not the original record. No matter, the genie was out of the bottle: faith depended on holy writ and the individual understanding. The emperor was a zealous Catholic (which did not stop his troops sacking Rome six years later), but also man of the world enough to become the most formidable holder of his title since Charlemagne. He later tried repeatedly to reach a compromise with the Protestants. In vain: Rome was not interested, nor were they. The Reformation, which was to divide and ensanguine Europe, and divides western Christendom even now, was irretrievably on its way.

And free, individual thinking with it? Not so fast. The reformers were to prove less keen on murdering their rivals than was the Roman church, but not much more tolerant. Even in as mild, and mildly Protestant, a country as Britain it took the 19th century to remove the last civil disabilities of Catholics.




Millennium issue: Old Russia and new

Show trial

Dec 23rd 1999

From The Economist print edition

1718

HE TOOK a strange and primitive country and made it a strange, modernish and nasty one. It was probably the most crucial shift in Russia's history. Peter the Great, tsar from 1682 to 1725, set out to modernise a medieval theocracy, and produced a militaristic police state based on slave labour.

Peter's aims—like those of some other Russian leaders who have taken short cuts in the name of progress—were admirable. He saw that Russia was too weak militarily to defend itself properly; and that to do so it must pay urgent attention to its technology, administration and education.

He achieved much. He founded the Russian navy. He started an ambitious system of canals (completed, at vast cost in life, by Stalin's political prisoners). He developed mining and manufacturing. He built a new capital, St Petersburg, from scratch. He even forced "German" dress and hairstyle on the population, famously insisting that the boyars, Russia's barons, shave their beards.

And his methods were appalling. They were exemplified by perhaps the most poignant event of his reign, the show trial for "treason" of his own son, Alexis; an exhibition of paranoia, deceit and brutality by the "Bolshevik emperor" (as one Russian historian today calls him) worthy of Stalin.

In reality, Alexis's greatest crime was to be the weedy eldest son of an ambitious father. His father's obsessive ambitions for him, as for Russia, were not matched with any systematic attention to his upbringing. He never learnt the manly and military virtues which his father prized. At his trial in 1718, he blamed his own "bad character" on "having been brought up from my infancy with a governess and her maids". By 1715, when he was aged 25, his father called him a "gangrenous limb" of the royal family; Alexis took the hint, relinquished his claim to the throne, and escaped to Vienna.

This infuriated Peter, who offered him a pardon if he returned, threatening him with lifelong pursuit in exile if he did not. When he reached Russia, however, the hapless Alexis learnt that his pardon was conditional on his revealing his "accomplices". Since there was no conspiracy, this was difficult. A trial followed.

The verdict was probably fixed in advance. But the niceties, just as in Stalin's show trials, were observed. The proceedings took place in public and were published afterwards; court and lay officials were consulted for their expert opinions (ecclesiastical authorities noted carefully that the Bible supported punishment for an errant son, albeit with the option of mercy).

There was evidence, of the best Soviet kind: hearsay and forced confessions. Alexis's mistress gave damning testimony: the tsar-to-be had told her that he "would maintain troops only for defence, and would not wage war against anyone." He was persuaded to confess by 25 blows of the knout—a favourite Russian instrument of chastisement—on the first day, and 15 on the second. Even the death sentence offered no respite: his torturers tortured on, in search of more information. Two days later, probably as a consequence, Alexis was found dead. According to one source, Peter had a tearful final meeting with his son, where he forgave and blessed him. What Alexis said in response is not recorded.

Russia’s inquisition continued, investigating 370 cases in the next seven years. Soviet rulers two centuries later were to cite Peter’s vigour as an inspiration for their own transformation of their country.

Millennium issue

Saragossa and total war

Dec 23rd 1999

From The Economist print edition

1808–09

AFTER two months of a second siege, Napoleon's troops had broken into Saragossa. The Spaniards were fighting house-to-house. A French officer later recorded one episode:

With a petard, we brought down the door of the church, which the monks were defending to the death. Behind them a mass of men, women and children had taken refuge at the foot of the altar, and were crying for mercy. But the smoke was too thick for us to distinguish the victims we would have wished to spare. We wrought havoc everywhere, and death alone stifled their cries.

Such was the enlightenment that Napoleon's admirers believe he was bringing to hide-bound, priest-ridden Europe.

Yes, but. Arguably, the Spaniards too, in their heroic, truly national, uprising against foreign rule were inventing total war. Saragossa lost 54,000 dead, many of them civilians, in those two months. Worse was to come: in the 1860s, Paraguay fought a five-year war that cost it more than half its people, including 85% of its men. And French accounts of Saragossa at least express pity, almost shame. After the less than enlightened Russian army in the 1870s had taken one central Asian city, its commander wrote:

We went on killing the Muslims until there were none left to kill.

—a lack which he plainly regretted. The process was to go further yet: in the hands of two eminent democracies, to Dresden and Hiroshima in 1945.




Millennium issue: Karl Marx

The prophet of capitalism

Dec 23rd 1999

From The Economist print edition

1848

LIKE most professional writers, Karl Marx worked best up against a deadline. The "Manifesto of the Communist Party" was written in a few days of round-the-clock creative inspiration in Brussels in January 1848. This intensive, adrenalin-fuelled, intellectual focus produced what was to become the world's best-selling political pamphlet.

The comrades of the Communist League back in London had imposed the deadline the previous December, after a ten-day brainstorming session in a room above a pub, the Red Lion in Soho. Marx was charged with getting their new-year resolutions down on paper. He missed January 1st, but, with input—though none of the actual writing—from his friend Friedrich Engels, the German text was in print by February.

And then? This pamphlet that was to have an impact on politics worldwide raised barely a quiver of immediate interest. The French revolutionaries of 1848 never saw it. It did not appear in Russian until 1869. It took the Russian revolution of 1917, 34 years after Marx's death, to make the world take note.

It has been Marx's misfortune that what he wrote as a tract for the times has been taken (by his supporters) as eternal truth or (by his critics) as an attempt thereat. But the Communist manifesto was in fact rushed out to try to rally the forces of the proletariat in the "year of revolutions", 1848. The year saw major revolts against the reigning imperial monarchies in France, Germany and Austria. Even in England, the Chartists, feted by Engels as the world's first organised working-class movement, threatened the bourgeois order with a monster demonstration, which promised to bring insurrection to the heart of London. Alas for Marx and Engels, the Chartists got no farther than Kennington Common, in south London, where they were halted by the forces of law and order under the aged Duke of Wellington.

The status quo survived the year of revolutions in mainland Europe too, if not without the odd casualty. Marx enjoyed a boisterous year in Germany, the land of his birth, trying to turn the nascent democratic movement in a more revolutionary direction. He failed, and made his home in London for the rest of a studious life, spent mainly in the reading-room of the British Museum, though punctuated with occasional rumbustious pub-crawls. The first volume of "Das Kapital" appeared in 1867; its author died in 1883; and 1894 brought the land of his refuge its first stab at a Labour party which, like today's version, owed little to either.

Communism did better elsewhere, but not as Marx had predicted in its manifesto. It did not prove "inevitable". The Russian revolution was imposed ruthlessly from above, the Chinese one by guerrilla war. As a guide to the sworn enemy, capitalism, however, Marx was more prescient. His account of the reasons for the survival and prosperity of capitalism has never been bettered. In a famous passage, he wrote that

Constant revolutionising of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation distinguish the bourgeois epoch from all earlier ones. All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air.

And not just in capitalism's homelands:

The bourgeoisie, by the rapid improvement of all instruments of production, by the immensely facilitated means of communication, draws all, even the most barbarian nations, into civilisation.

And so capitalism evolved into globalisation. All other systems, communism included, found themselves chasing shadows. For once, Marx was proven right.

Garibaldi and the 1,000

Dec 23rd 1999

From The Economist print edition

1860

THEY were a thousand, roughly (1,027? 1,044? 1,089? The records disagree), the redshirts whom Giuseppe Garibaldi led from Genoa in May 1860. Against the odds, they conquered the *mezzogiorno*, the Italian south, and opened the way to a united Italy. The nation-state was never the 19th-century invention that it is sometimes painted as: think of France, or England. But this, with the birth of Italy in 1860-70, and of the new Germany in 1871, was its heyday; the 20th century has mainly demonstrated its disadvantages. And no episode was more dramatic than that of Garibaldi and his *mille.*

The thousand, aged from 11 to 69, included one woman, Rosalia Montmasson, wife of Francesco Crispi, who had masterminded the expedition. Four-fifths of them were from the north; one-third from Bergamo and Genoa alone. Nearly all were middle-class: teachers, writers, traders, 150 lawyers and law students, 100 physicians, 50 engineers, 20 chemists, ten painters and sculptors, three priests and, more usefully—they set off in a pair of paddle steamers—30 naval officers. Italy's *risorgimento* was not a whole nation rising against its oppressors, as 19th-century romanticism proclaimed and Giuseppe Mazzini wished, but a few well-educated people leading the way.

Garibaldi was a colourful, lucky, mildly irresponsible risk-taker. Famed as a guerrilla leader in South America (the idea of red shirts came from the abattoirs of Uruguay), he had fought against north Italy's Austrian masters in the revolutionary-nationalist uprisings of 1848-49, and again, alongside the Piedmontese, in 1859. Many Italians hero-worshipped him. In Turin, Piedmont's prime minister, Count Camillo Benso di Cavour, despised him (and was detested by him); but its King Vittorio Emanuele II gave the expedition some encouragement.

Not that Garibaldi was gung-ho for it. In the spring of 1860, he was in a sour mood. France and Piedmont, in alliance, had kicked the Austrians out of Lombardy. But the Franco-Austrian peace of Villafranca had prevented him liberating Venice (and he had just found out that his new-wed second wife, Giuseppina, was pregnant by another man). Nor, though the people of Tuscany and Emilia had voted to join Piedmont, was he convinced that the time was right to rid the *mezzogiorno* of its Bourbon ruling family—their kingdom of the Two Sicilies stretched halfway up the peninsula—and bring it too into the nascent Italy. Yet many around him thought otherwise; Vittorio Emanuele gave the nod; so off he went.

On May 11th, the thousand landed at Marsala, in western Sicily, to a warm welcome from, well, the British consul. The young Bourbon monarch sent 25,000 soldiers to defend his newly inherited kingdom. But when their advance guard could not hold Garibaldi's ragged force, the Sicilians, disliking their rulers from Naples and hoping for land-distribution, decided (led by the powerful mafia of the time) that he was their man. Cheering crowds welcomed his troops to Palermo, and the royal army of 20,000 surrendered. After that, across the straits of Messina, and it was almost a stroll to Naples; Garibaldi arrived there by train.

In Turin, Vittorio Emanuele was pleased, but cautious. Cavour feared Garibaldi's popularity among the lower classes, and his republican ideas. So the northern king rushed south to collect what Garibaldi had won: half of the country. The two met at Teano, a little north of Naples. Five months later, in March 1861, the new Italian parliament met in Turin and proclaimed Italy's unity.

And Garibaldi? His thousand disbanded, he returned to his island home on Caprera, north of Sardinia, with his spoils of war—some coffee and sugar, a bundle of stock-fish and a box of macaroni. The press was told to ignore him, and his later efforts to oust the Austrians from Venice and papal rule from Rome came to nothing. Italy soon got both (thanks mainly to Prussia's wars with its rivals), and became a centralised state, torn by Catholic/"liberal" differences, allergic to reforms, and run as a private fief by an oligarchy. Much, in sum, as it still is.




Millennium issue: Hitler and Stalin

The heights of evil

Dec 23rd 1999

From The Economist print edition

1933–45, 1924–53

AS NIGHTMARES go, the similarities are striking. Adolf Hitler and Joseph Stalin gave us the word "totalitarian". No regimes, ever, had encompassed with such totality the peoples under their sway. Few had such mad ideas, none the means so intensively to stuff their subjects' heads with them. None had both the technology and the readiness to kill on so huge a scale. They murdered by the million, terrorised by the hundred million—and, Hitler for 12 years, Stalin for 29, until his death, they got away with it.

Yet the differences were large. For one, Hitler was appointed chancellor, in January 1933, constitutionally, and with a ballot-box mandate: his National Socialists had won 37% of the vote in the free-and-fair Reichstag elections of July 1932, more than any other party. By 1939, rising living standards, a new sense of order, albeit forcefully imposed, and success abroad had won him huge popularity, which the hysteria of war and conquest then increased. For those Germans, the bulk, who supported him, or at least kept their heads down, life was far better, until the Soviet army and the Anglo-American airforces got to work in 1943, than the grim years of inflation and then unemployment after humiliation in the first world war.

Russia's Communists never had such popular backing, except maybe in the joy of victory over Germany in 1945. Lenin took power in 1917 in a coup. His Bolsheviks won under 25% of the votes for a constituent assembly in the only national election they ever allowed, far behind a rural party of the left. Starting, it's true, from a low base, in 74 years they never gave Russia's people more than a hint of prosperity from a state-run economy built—above all under Stalin, leader from 1924 till his death in 1953—by ruthless means.

Yet in many ways they outdid Hitler. They lasted far longer in power. They beat him in battle, and then for half a century made the Soviet Union the world's second superpower. And they managed, violently, a deep transformation of society. A nation four-fifths peasant and two-thirds illiterate was industrialised, urbanised and educated within 30 years. The entire economy was torn from private hands, entire social classes demonised and destroyed. The once mighty Russian church became, on sufferance, a eunuch of the state. Hitler, charismatic and revolutionary by temperament, did none of this. He uprooted Germany's political establishment, but not the fundamentals of its economy or the social order.

Nor were the two ideologies mirror images of each other. Communism offered a coherent belief system, based on a false theory of the perfectibility of man and the pseudo-science of economic determinism. It had universal appeal: brutal in fact, but seemingly idealistic, the system solidified under Stalin won admiration in many poor countries, and from a host of clever fools in rich ones.

Hitler's notions were woollier, more mystical, resting on such concepts as will, authority, racial superiority and worship of the leader. They spoke only to the German-speaking Reich, though he had emulators among those who upheld fascism (a different idea, though the two are often thought the same) in Italy and Spain. He successfully spoon-fed an educated nation vile anti-Jewish fantasies that should have been spat out by any ten-year-old. But only the besotted (which included neither Mussolini nor Franco) could take them seriously, except in their more than vile results. Although Stalin too used a cult of personality, his system survived him; it is unlikely that Hitler's could have.

One thing the two had in common: ruthless violence. Both used ferocious internal repression. The edge here goes to Stalin. Even Hitler's armies of snoopers, his 95 Germans a day convicted of political crimes in 1933-39, his political murders, concentration camps and killings of Jews and left-wingers in that period, cannot match Stalin's record. Russia had traditions of secrecy and violence; but the isolation, paranoia and terror that kept the Soviet people in thrall for so long exceeded anything comparable, anywhere, ever.

Both men also oversaw worse than that: mass murder. Hitler's massacre of European Jews was an act of genocide without millennial equal. It is a cruel irony that Germany's own half-million, attacked from 1933 on, had more chance of flight in 1933-39 than the millions in Nazi-occupied countries, once their fate had been decided on in 1942. Slavs, Gypsies and what the Nazis saw as other sub-species also were killed in millions. Add on the 40m-50m dead, direct and indirect, of the war that Hitler unleashed in 1939 and he must lead history's list of infamy.

Unless Stalin does. He, even if not alone, must share the guilt of war; whatever the errors of Britain and France, it was his pact with Hitler in August 1939 that gave the green light. And the total of Stalin's victims in peace-time in his own country—no serious estimate is below 11m, some much higher—far exceeded those that Hitler had notched up by 1939. That many died of famine due to forced collectivisation in Ukraine and elsewhere in 1928-33, in deportations of entire peoples later, or, at all times, in inhuman labour camps, rather than by overt execution, lessens his guilt not a jot. At his death in 1953, the labour camps had never been so full.

The two countries and peoples have emerged very different from their past. Russia, like much of the eastern Europe that it misruled for nearly 45 years, is still mired in poverty, corrupt, barely democratic. Vanquished Germany, soon allied with its western conquerors, rapidly rose from the ashes of totalitarianism to become a decent land of freedom and prosperity. And peace.

There is no answer to the question which was more evil, Hitler or Stalin? Stalin's legacy, by the weight of time, has proved harder to offload. But both men defy moral measurement. It is like asking whether pulling out toenails or giving electric shocks to the genitals is the more acceptable form of torture.

Napoleon Bonaparte, ex-emperor

Dec 23rd 1999

From The Economist print edition

1815

NATIONAL constitutions, Napoleon Bonaparte said, should be "short and obscure". Had the sometime emperor himself only been content with that same condition, a million fallen soldiers would still be alive today. Instead, though short beyond reproach, he has been everything save obscure. He has marched far enough and fought long enough to turn all Europe into a battlefield. Self-proclaimed an emperor, here and there the installer of his brothers and marshals as its kings, he has shaken the continent so violently that he may well have unbalanced its natural order for decades to come.



The worst of the nightmare is over. Bonaparte is aboard a British warship, under guard and heading into exile. He is bound for the South Atlantic, where he will live out his days on the island of St Helena with a dozen servants and a general's half-pay. Many view this as too generous a fate, and they have a case. If the rulers of Europe had sent Bonaparte to the gallows instead, law and natural justice alike would have smiled on his execution.

And, conceivably, he may have mischief within him yet. Nobody foresaw his capacity less than six months ago to escape from a first exile in Elba and to raise yet another army in France. That adventure bought him a hundred days of freedom. Europe paid for it with 100,000 lives.

But there is a compelling argument for erring on the side of clemency, which Britain does well to heed. Of course Bonaparte is a bad man. Of course he is a dangerous man. But he is also an exceptional man who has diverted, devastatingly, the course of European history. He has put himself in British hands for fear of worse. To execute him would smack of pettiness, not justice. And St Helena, unlike Elba, is far enough removed from France to ensure there can be no second escape.

All of which is not to wish His Most Corsican Majesty a long and happy retirement. Far from it. He deserves the fathomless private torment which an honest recollection of his life would bring. Let us hope the baggage accompanying him into exile includes at least one of those flattering portraits by Gros or David showing the First Consul, lean and bright-eyed, on the field of an early battle. And on St Helena let this hang next to a long mirror, so that old Boney (by name, but no longer by nature) can weep each morning at the evidence of his decline. Barely 45 years of age, he has slumped from the figure of a young Greek god to that of a sickly and sag-bellied pensioner.

Doubtless Bonaparte will prefer dishonest reflection. He can spend the long evenings which remain to him writing letters and memoirs which will justify his actions when in power. He can devise tales of others' treachery and of the cruelness of fate to explain away his defeat. This may win over some readers. But it is to be doubted whether Bonaparte could, in fact, tell much of value about the causes of his rise and fall, even should he want genuinely to do so. He was a shrewd and tireless opportunist of undoubted military gifts—but one whose hunger for power and wealth was never matched by a capacity for managing those commodities, once acquired, in an intelligent and durable way.

Such political insights as he possessed were those supplied by his experience of the French revolution. He watched it mutate into mob-rule and corruption. He seems to have come away persuaded that violence alone could determine human affairs, and that all other statecraft was merely the decorous concealment of this basic truth. He treated other men as worthless, or close to it. When necessary, they could always be bribed or killed.

We may say, on his behalf, that this simple view of the world allowed him, once in power, to pursue two general and complementary aims. The first was to impose civil order at home. The second was to conquer and loot other countries at the rate needed to sustain an army large enough to see off any challenger it was ever likely to encounter. He rose for a time because these were not, in truth, bad policies for France. He fell when the second of them proved unsustainable, and began to threaten the first. His policy at home was to favour "new" money as the keystone of his order—meaning, in practice, the promotion of poor men who had grown rich through the opportunities for theft afforded by government or military service. The vulgarity and licentiousness of this new class has given much innocent amusement to the rest of Europe. One need not spend much time *chez* the first Duchess of Danzig to guess at Mme Lefebvre's earlier career as a washerwoman. But this was a class splendidly admiring of Bonaparte—so long as he was winning his battles. In his gift, then, lay the loot and exotic titles which they craved. The trouble came when he started losing. He discovered that he had invented a gentry almost as cynical as he was himself. They cared nothing for an emperor who began to cost them money.

Now, *noblesse oblige*, these new French seem happy to resume life under Louis the Umpteenth—so long as he invites them to court and taxes only the poor. If he disappoints on either count, they will in another decade or two contrive some other regime that suits them better. One senses in France after Bonaparte a country where great entrepreneurial energy has been unleashed, but vitiated by a dangerous streak of silliness.

Elsewhere in Europe, the danger is that too little cynicism may prevail. Bonaparte has installed in France the institutions of a modern state; those of administration, of law, of finance, of civil and military education.These may outlast him, indeed his and our century. Thanks to him and them, the whole continent has glimpsed the possibilities inherent in a well-functioning modern tyranny—clearly the finest system of government imaginable, so long as one cares nothing for humanity.

The main structural flaw in Bonaparte's tyranny was that it had no great cause, no great idea to sustain it. It had nothing but the exhortations of the tyrant himself. We may revile him, rightly, for his cynicism and selfishness. But imagine how much more awful Europe's next tyranny will be, if it is idealism that drives it.




Millennium issue

A nation of immigrants

Dec 23rd 1999
From The Economist print edition

For well over 100 years, Americans have looked with suspicion on the latest arrivals. Yet somehow they have all found their place

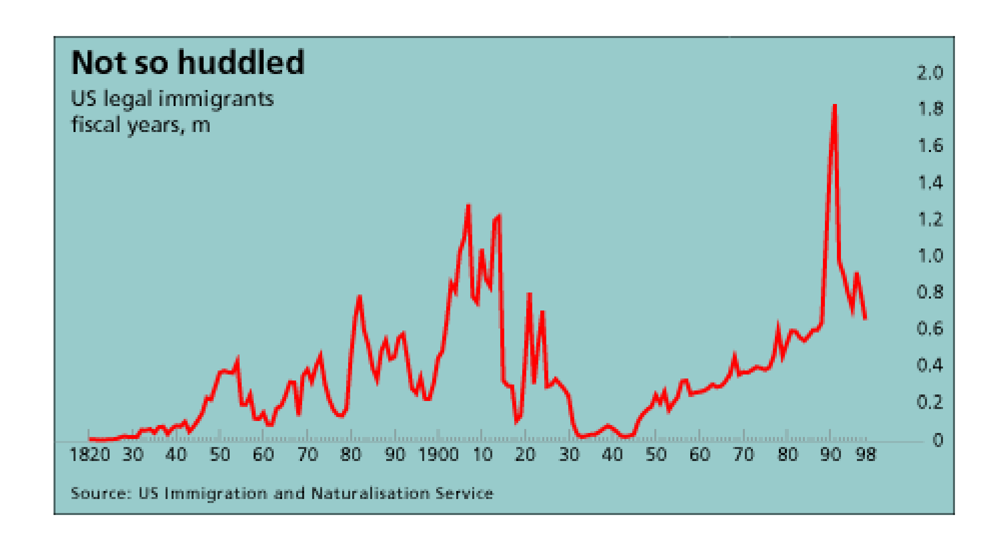
For well over 100 years, Americans have looked with suspicion on the latest arrivals. Yet somehow they have all found their place

1954

ON NOVEMBER 19th 1954, the United States' immigrant-processing centre on Ellis Island closed its doors. The last detainee, Arne Peterson, a sailor who had overstayed his shore leave, was allowed ashore. He left behind a warren of rooms, their paint already peeling and some of the windows broken, where lines of nervous and excited people had passed through towards new lives.

Between its opening in 1892 and 1954, 17m came this way, ancestors of (or part of) some 100m of today's Americans. Customs men poked in their bundles and prised open their cardboard suitcases; officials pinned numbers on their jackets; doctors peered into their mouths. Once certified disease-free and not feeble-minded, they were allowed across the harbour into New York.

For centuries, people had come to America as they chose. From the Pilgrim Fathers on, it was a safety valve for Europe's free-thinkers, discredited politicians and wayward second sons. They were not inspected, and the land's abundant space ensured that they were seldom resented, except by its dispossessed native peoples. But these did not count, any more than the 400,000 Africans shipped in (one in eight after the trade was banned in 1807) not as immigrants but chattels. America, though rapidly developing its own brash confidence and culture, was essentially Europe offshore: English-speaking, Christian, its ideals inspired by a mixture of French radicalism and Greco-Roman *gravitas*, and financed by hard work and slavery.



Until the late 19th century, the government actively sought out Europeans—solid farming types, potential citizens all—to settle the empty prairie. Germans, Swedes and Norwegians came, providing a dogged layer of enterprise that still underpins the image of states such as Minnesota and Nebraska. America's mission was not

to be a mosaic of immigrant groups. It was to people the wilderness with industrious white Protestants, as God no doubt had intended.

Yet mass immigration, sparked by famine among the (mainly Catholic) Irish, had already begun in the late 1840s. It doubled to 500,000 a year in the 1880s. As the crowds swelled, their skin colour grew subtly darker. An uneasy government set up centres to process them. Most Chinese had been barred in 1882. A law of 1891 in theory shut out anyone with a "loathsome" disease or "likely to become a public charge". It had no great effect, and during 1901-14 the newcomers totalled nearly 1m a year. War in Europe, first, and subsequently new controls were to curb the flow. But by then the good was done. Legions of Italians, Irish, Poles, Jews from all over, were in place, relying for work and shelter not on the public purse but on support groups of earlier arrivals from their home country, region or town. From the 1890s they transformed America's northern cities, and manned its economy, booming anew after that decade's depression.

Many native-born citizens thought them dangerous, crowded together in ghettoes, clinging to their exotic religions—even, for a time, languages—and carrying the whiff of socialism. A century later, their descendants, living now in detached houses in tree-dotted suburbs, filled all branches of government and dominated the country's culture, a culture known worldwide as "American".

Yet that was in the future. In 1917 rising nativist anger demanded a (feeble) literacy test for immigrants, and in 1921 monthly quotas based on national origin. Though only 2% of would-be entrants failed the inspection at Ellis Island, the days of the open door were over. Today, America still selects by national quota (the once loathed southern Europeans and Jews now being prized), and increasingly by talent, no matter where from. Ideological purity too is demanded. In the 1930s, America was still a beacon, as three centuries before, for those whose ideas were unacceptable at home (though far from open-doored to Nazi Germany's Jews). But after 1945 Ellis Island was packed with detained "communists" and "fascists", and in the 1980s victims of right-wing regimes were deliberately given low priority for entry. Now, as war sends pitiful masses of humanity in its direction, America is no more instinctively welcoming than any other place.

It has become more crowded, of course; though crowding is relative, and few newcomers from Europe or Indochina would notice. More important, since the 1970s the notion of immigrants as a potential public charge—poorer, with less to offer, unready to assimilate—has become routine.

Superficially, with some reason. In the past three decades, Indochinese boat people, Cuban raft peopleand penniless Mexican wetbacks have poured in. Compared with the orderly queues of Ellis Island, their arrival seems chaotic. Yet their purpose is the same: a better life. A few years later, studies find them following the normal immigrant path: becoming citizens, opening small businesses, owning homes and breeding children whose first language and values are those of the country round them.

The south and west have seen recently what looks like a *reconquista* by Spanish-speakers, legal and illegal; employers eager for meat-packers, strawberry-pickers or dish-washers do not always care much about papers. What might be called a taco belt now stretches from San Francisco to Houston, and over to Florida. Much of this region was settled by Spanish missionaries and soldiers long before the English arrived in the north. So fair enough, one could say, to the new salsamusic and Spanish ATM machines. Yet Anglopoliticians fret at bold extrapolations that by 2050 Latinos will be the biggest group in both California and Texas. They envisage America's sense of itself, that primacy of flag and constitution and Puritan mission, slowly slipping away.

They should not worry. What is coming to birth is a mixture, part-Anglo, part-Spanish, where people intermarry and languages blend, just as German and English blended in the mid-west long ago (that too considered, at the

time, just as pernicious to WASPness). This will be a different America, one whose colours and tongues have shifted, but no less America for that: a place still brimming with liberty and opportunity that any sailor worth his salt would, like Arne Peterson, contrive to overstay his shore-leave for.




Millennium issue

Buying Manhattan

Dec 23rd 1999

From The Economist print edition

REPUTEDLY, it was the greatest real-estate deal, or steal, of the millennium: Peter Minuit, director-general of New Netherland, the Dutch West India Company's colony in North America, in 1626 bought Manhattan for a load of trinkets and other goods worth 60 guilders, $28 at today's rate.

1626

If in fact he bought it. The evidence is sketchy. The first real piece was found only in the 19th century, a letter from Peter Schaghen, another official of the company, recording that "our people have purchased the island of Manhattes from the wild men for the value of 60 guilders. It is 11,000 morgens." That is 23,000 acres (9,400 hectares). In fact, it's about 15,000 acres. And probably the native Americans, in their minds, passed the Dutch only a right to use the land, not ownership, an unAmerindian concept. Some even whisper that the deal was done with Indians not from Manhattan but Brooklyn. Still, Manhattan it was, and the Dutch got it.

Yet was it really such a deal? Not for them: in 1667, they passed the island on to the English in exchange for Suriname, surely the worst real-estate deal ever. And were the Indians really robbed? Yes and no. If they could have found some ironclad investment (Dutch tulip bonds? Maybe not) to put their $28 in, at 5% tax-free it would by now total $2.2 billion. Which is plenty? No: Manhattan's land and air are worth far more. Yes, but. What would they be worth if it had not been sold?





Millennium issue

The Second of July

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YES, July 2nd is the day Americans should celebrate. Congress was in session in Philadelphia. Unanimously (bar the New Yorkers, awaiting a decision from home) the men from the 13 states resolved

1776

that these united colonies are and of right ought to be free and independant states; that they are absolved from all allegiance to the british crown and that all political connection between them and the state of Great Britain is and ought to be totally dissolved.

The, quite distinct, declaration of independence had already been drafted, mainly by Thomas Jefferson (only, to his regret, to be vigorously amended by Congress). In the practice—not the thought—of the day, its sonorous opening was indeed revolutionary. Governments then did not "derive their just powers from the consent of the governed". Few men, let alone of the class that signed up to it, acted on the "self-evident" truth that their fellows were "created equal" and entitled to "life, liberty and the pursuit of happiness"; slave-owners such as Jefferson alienated these rights every morning and many a bedtime too. The ideas were common by 1776; but it was entirely novel to put them in a solemn declaration of state.

Yet that is all the document of July 4th was: a declaration, justifying the resolution of the 2nd. And in its first 15 years, little attention was paid to it, let alone as the classic statement of American beliefs.

So how did July 4th become what it is? Almost by chance. John Adams, who had had a hand in the declaration, and a far bigger one in getting both texts voted through, called for celebrations on the next July 2nd. Congress gave the idea barely a thought until that very day. But the citizens of Philadelphia were not to be denied; and the day they chose to make merry, with a band and fireworks, was the 4th.

Then, in the party warfare of the 1790s, under George Washington's two presidencies, the declaration made good copy for Jefferson's Republican friends. The Federalists in reply emphasised the resolution, and the part played in it by their man, now Vice-President Adams. But they claimed his share in the declaration too. By the time Adams was elected president in 1797, and Jefferson in 1801, the Fourth of July and the Declaration of Independence were on their way to capital letters and icon status

Millennium issue: The frontier

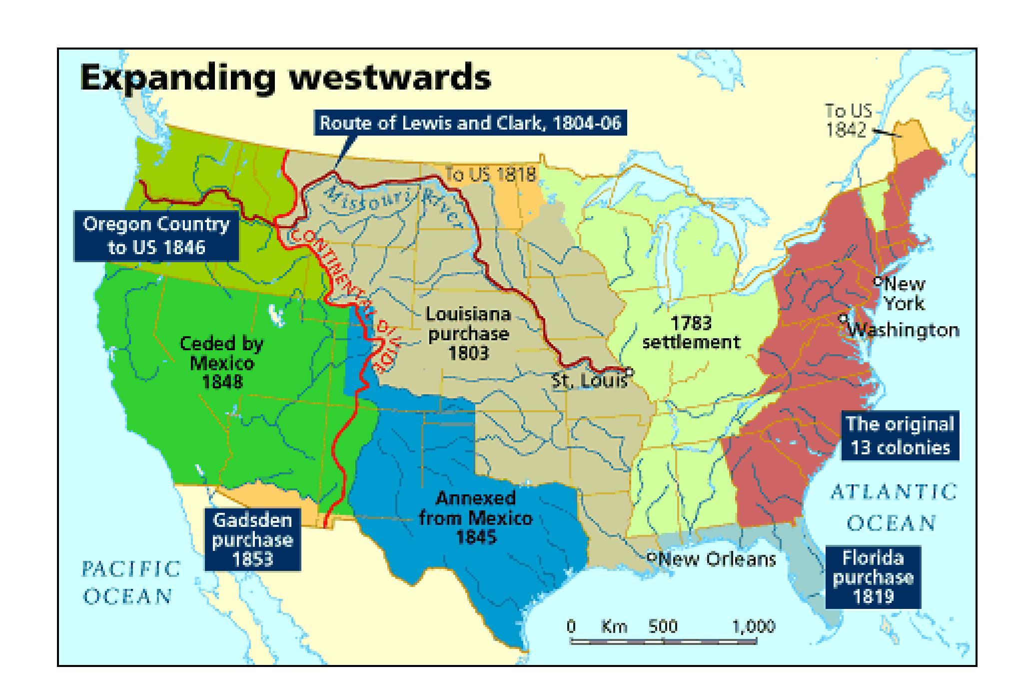
Heading west

Dec 23rd 1999

From The Economist print edition

AN ARMY captain and personal secretary to President Thomas Jefferson, Meriwether Lewis straddled a silvery brook a foot or so wide. It was the source of the Missouri. No white American had ventured this far. Weak with dysentery, Lewis climbed to the brow of a hill. This, he knew, was the continental divide, whence the rivers ran west. He would see the Pacific. In fact, he saw a wall of massive snowy mountains, beyond them another wall, then another. A lesser man would have given up. Lewis, in his own stoical words, "proceeded on".

1805



That very day in Monticello, Virginia, Jefferson took delivery of the findings Lewis's expedition had sent back from its winter camp: charts and journals, seeds, animal droppings, reports on Indian peoples, a live prairie dog. Jefferson took the Indian corn and planted it in his garden, hung the elk antlers in his hallway, and laid the expedition's painstakingly drawn maps on the floor to pore over. He had reason to be excited: the idea of the expedition had been his.

Jefferson had picked Lewis and William Clark, another Kentucky frontiersman, to command the expedition jointly. Its mission:

to explore the Missouri river, and such principal stream of it, as, by its course and communication with the Pacific ocean...may offer the most direct and practicable water communication across this continent for the purposes of commerce.

Jefferson believed that whoever controlled a river route to the Pacific would control North America. So did others. In 1793 a company had been set up in Mexico city offering a prize to any Spanish subject who reached the Pacific by way of the Missouri. The same year Alexander Mackenzie, a Scot, had crossed the continent.

Jefferson had set about organising the expedition with scientific rigour. It must also add to the knowledge of the west. That was limited. Many, for example, expected the explorers to encounter a tribe of Welsh-speaking Indians descended from Madoc, a Welsh prince who supposedly had fled to America in 1170 with several thousand followers.

The river route no more existed than did the apMadoc Indians. Yet the expedition was to change Americans' concept of their country. On Independence Day 1803, a little before they set out, Jefferson announced the purchase of the Louisiana Territory from France. The vast expanse of uncharted land cost $15m, double the federal budget. Many, especially in New England, thought the deal absurd. "We are to give money, of which we have too little," wrote a Boston newspaper, "for land, of which we already have too much." Jefferson had no such qualms. First accumulate land, then establish sovereignty, and the settling would take care of itself, he reckoned.

The Lewis and Clark expedition melded itself through hardship into a unit. When it voted on important matters, York, a slave, and Sacagewa, an Indian woman guide, had an equal voice. For maps it relied on sketches scratched out by Indians for it in the dirt or on animal hides. The Spanish launched two expeditions to intercept and if necessary kill "Captain Merry". They never came near him. The expedition reached the west coast with only one death. The Spanish failure and Britain's half-heartedness in asserting its claim (abandoned in 1846) to "the Oregon Country" was to assure the United States of control of all the land the expedition passed over.

The Indians struggled to conceive the explorers' purpose. Were they on a vision quest? In a sense. But instead of shamans, they had sextants and compasses, quills and prayer books. The destiny they were charting was not their own but that of America.

White America. The Corps of Discovery, as the expedition styled itself, arrived half-dead in Indian villages. It was cared for. Its Indian hosts were offered "the hand of unalterable friendship"; what they got was ruin. By 1900 whole nations had died of smallpox, and those that were left had been cheated or hunted off their ancestral lands.

The speed with which the west was settled would have amazed Jefferson. He believed it would take 100 generations. The rough canoes of Lewis and Clark gave way to prairie wagons, trains, then cars and planes. All at a cost, not only to the Indians. The buffalo were wiped out, wolves and bears were driven north. The earth was strip-mined and polluted. The billowing grasslands became a sea of chemically enhanced wheat and maize. Fast-flowing rivers were dammed listless. And today's United States was born: no longer a nervous ex-colonial fringe along the Atlantic seaboard, but a continental power.





Millennium issue

FDR and the New Deal

Dec 23rd 1999

From The Economist print edition

IN 1932, in deepest slump, American voters threw out their president and elected Franklin Delano Roosevelt. With 12m out of work, enter the New Deal. Its kingpins were four:

1930s

• Deficit spending. In 1933-34, federal revenues were $3.1 billion, spending $7.1 billion, "recovery and relief", as generously (to Roosevelt) defined, getting $4 billion.

• Relief for the jobless, in cash or, increasingly, in work (real or phoney). Within a year, this was aiding some 5m families.

• Restraint of farm output, to raise prices. In this huge industry, already hit in the 1920s, net income had fallen by over 60% by 1932. By 1936, farm prices had doubled—thanks, notably, to drought in 1934.

• The National Industrial Recovery Act, aiming to increase jobs, output and prices by cutting hours, raising wages and "fair" competition. Yes, all together. *The Economist*, in a long survey of the New Deal in October 1936, mocked the law as

an extraordinary catch-all [that] collects more divergent economic and social theories under the roof of a single enactment than any other piece of legislation ever known;

a law, as run (mainly by employers),

whose motto might have been 'Cartels for All'—

but few of them, happily, that worked. In 1935 the Supreme Court overturned the law. This paper thought it "very doubtful" that it had been more help than hindrance.

We were right. Average hours in industry had been two-thirds of their 1929 level at the moment, their worst, that Roosevelt took office. They had already risen sharply before the act had any effect (which was mainly to lower them, while indeed, as intended, getting more people into work).

The real difference was Roosevelt: his vigour, his vision, his cunning, his leadership. Recovery took time: by late 1936, industrial employment and output were still at about 90% of their 1929 level, rail freight 75%, house-building 50%. Yet look at March 1933, not at Utopia, *The Economist* wrote, and the New Deal had been

a striking success. Mr Roosevelt may have given the wrong answers to many of his problems. But he is the first president of modern America who has asked the right questions.

A month later, with some help from his pioneering social-security (pensions and unemployment) law of 1935, he was re-elected, in a landslide. It was men like Roosevelt, this paper then wrote, who

with all their faults and inconsistencies, become, and deserve to become, great statesmen.

With his new strength, we added,

it is even conceivable that he may venture to act upon the belief that a great nation like the United States should have a foreign policy.

As, belatedly, he did. And how. Twice again re-elected, Roosevelt died in April 1945, leaving his vice-president and successor, Harry Truman, a world war to finish, the atomic bomb, ravaged Europe to rebuild and a problem called the Soviet Union.

Millennium issue: Black Americans

He had a dream

Dec 23rd 1999

From The Economist print edition

THE Reverend Martin Luther King did not die in vain when he was shot dead by a sniper at a motel in Memphis, Tennessee, in 1968. Yet at the time many thought he had.

1968

In American blacks' struggle for rights and dignity, he was the great advocate of non-violence. Yet the murder provoked mobs to riot, burn, loot and kill across the land. The civil-rights movement had suffered a grave double blow: not just the death of its leader, but the reaction to it. Almost everybody agreed on that.



Almost everybody was wrong. King proved to be worth even more to his cause dead than alive. His influence had been on the wane since it peaked with his famous "I have a dream" speech to 200,000 demonstrators in Washington five years earlier, when he called, in the mesmerising cadences of a southern preacher, for his country to live out the true meaning of its creed: We hold these truths to be self-evident, that all men are created equal.

Yet since then King and his wing of the civil-rights movement, the Southern Christian Leadership Conference, had lost influence everywhere except in the old South.

Southern blacks remained thankful for the gains that he and other activists, mostly committed Christians, had won for them. And those gains were big. Though slavery ended in 1865, 80 years later blacks in the South still could not use the same water fountains, public (or petrol-station) lavatories, restaurants or hotels, as whites. Nor attend the same schools. Even buses, churches, beaches, playgrounds and—nationwide—baseball and the army were segregated. Yet by the mid-1960s these barriers were going or gone, and Congress was being strong-armed by President Lyndon Johnson to pass the landmark Voting Rights Act of 1965.

Blacks elsewhere, especially in the inner cities, were less impressed. Many were the children of migrants from the South. But they had not themselves met such overt discrimination. They were more aggrieved at being stuck in slum housing and low-paid, low-status jobs. Their political consciousness and expectations raised by the civil-rights struggle, they provided a ready audience for the sort of radicals who scorned King's "Uncle Tomism": firebrands like Stokely Carmichael, populariser of "black power", or the Black Panthers' Bobby Seale.

King's murder did not rout the radicals, but it gave moderates a martyr far more inspiring than Malcolm X, the black separatists' alternative. King's vision of an integrated America, "the beautiful symphony of brotherhood", encompassed white, black and (which means most American blacks) all shades in between. His oratory, captured on tape, inspires still. As his widow says, his ideals are now "mainstream" and "deeply embedded in the very fabric of America".

But they are not uncontroversial. King dreamed of a nation where people are judged not "by the colour of their skin but the content of their character". Many American blacks today celebrate their distinctiveness. And not just the followers of Louis Farrakhan, whose Nation of Islam took the "million-man march" into Washington in 1995. At elite colleges, many black students prefer to eat at separate tables from whites, and make a point of

dressing differently and talking among themselves in a dialect that Californian sociologists call “ebonics”. For them, even inter-racial socialising, let alone inter-racial dating, is taboo.

This worries many whites, especially those who marched side by side with King’s activists. Isn’t it just the colour bar revived, they ask? No. Segregation enforced is one thing, chosen another. But it is no road to the integration of King’s dream. Time will show whether “equal and separate” is a wiser one.

Uncle Tom

Dec 23rd 1999

From The Economist print edition

ST CLARE has bought a new slave.

1852

Carelessly putting the tip of his finger under Tom's chin, he said good-humouredly, "Look up, Tom, and see how you like your new master." Tom looked up. It was not in nature to look into that gay, young, handsome face, without a feeling of pleasure; and Tom felt the tears start in his eyes as he said heartily, "God bless you, Mas'r."

Poor Uncle Tom. After a lifetime of faithful service, to sundry earthly masters, but also to one above, and, yes, to his race, he is dispatched by his creator, Harriet Beecher Stowe, cruelly beaten, to a better world. And today sees his name used as a sneering synonym for the N-word-without-attitude toadying to whitey, and Mrs Stowe derided as that worst sort of white, the liberal sort.

And what nonsense that is. In its day—the 1850s—"Uncle Tom's Cabin", deeply felt, was a deeply moving and hugely influential statement. And a well-aimed one, hitting not just at southern slave-owners, cruel, careless or kind, but at the northerners who practised or tolerated slavery at one remove. For all her comic or subservient blacks, Mrs Stowe did not disrespect them. She did what she could against evil in the context of her time; which is more than most of us can say. Her only crime, a common one, was not to have the attitudes of 125 years later.

And Uncle Tom? The passage cited here symbolises the world's view of him. Read the book, not just a few lines of it, and you will see something else: a black man—in Tom's context—of assurance, strength and dignity; the sort of man whom, albeit differently, leaders from W.E.B. Du Bois to Louis Farrakhan have hoped to create. His name deserves honour, not misuse




Millennium issue: The hyperpower

Kosovo and commerce

Dec 23rd 1999

From The Economist print edition

1999

THE cruise missiles were heading for their targets, the aircraft smart-bombing from the skies. The Apache helicopters were at advanced bases, ready to smash what might be left of the dictator's weaponry. The US Marine Corps was on its way. And then?

Well, the missiles hit most of their targets, many non-military, a neutral embassy among them. The smart bombs—when they exploded—shattered bridges and buildings, quite a lot of Serbs, a few Kosovan Albanians and a great deal of farmland. The helicopters never went into action, for fear they might be shot down. And as the Serb forces, largely intact, pulled out, the marines were providing a photo-opportunity for the secretary of state, while the derided Russian army stole a march into Pristina airport. As the millennium ended, the United States was the greatest power in history, the only one whose troops and diplomats, traders and bankers, factories and film makers, reporters, cameramen, currency and computers have dominated the entire planet (plus, briefly, a little of the moon). And of all history's great powers, surely the strangest.

By 1900 the American economy was already, by far, the world leader. By 1910 its steel output matched that of Germany, Britain and France together. Its motor industry, symbol of the 20th century, was about to spread worldwide, as its airliners and electronics would later. In Hawaii, then Puerto Rico, Cuba and the Philippines, "liberated" from Spain in 1898-99, and later in Panama, it had begun to carve out what was, in all but name, a colonial empire. As Europeans rushed into collective suicide in 1914, it wisely sat on the sidelines; not until late May 1918, after French and British troops had broken the back of the last big German assault, did American ones go into battle, in any number, to ensure victory.

Neatly in time for the United States to pick up the spoils—which it didn't.

On the contrary. It helped to set up the world's first global peacekeeping organisation, the League of Nations—and then refused to join it. Its troops, now battle-trained, went home—and stayed there. The globe's top dog retired to its own backyard as if the outside world bit. Not even Japan's takeover of Manchuria in 1931-32 and attack on China proper in 1937 could arouse it. It looked coldly on Hitler's antics in Europe, yet almost as coldly on the refugees fleeing from them.

When antics became war, it readily sold arms to the British, against promises to pay later, and its president was ready to go further. Not so his public; less wisely this time, maybe, but maybe not. Only after Japan, facing an American/British/Dutch fuel embargo, had hit back with the lunacy of Pearl Harbour in December 1941 did the great power launch itself, mightily, into war.

Nearly 300,000 Americans died in battle, and this time there was no retreat from the burdens of power. The United States led in creating the United Nations, and then in running it. For 45 years of cold war it marshalled and defended the lesser countries of the West and its own new protégés in Asia. It was pulled into one vicious but won war in Korea; stumbled into one that it lost in Vietnam; and having lost 80,000 of its young on those battlefields (plus 14,000 behind them) ended the millennium wielding the nuclear megatons of Armageddon, and scared of any total of bodybags that might justly alarm the police force of Liechtenstein.

Stranger still, what did it not end with? A territorial empire. For all its hegemony of the West, and then the world, the United States did not build outward from its all-but colonies. Hawaii and Puerto Rico apart, it retreated from them. Even when next-door Cuba turned to communism, it left Cuban exiles to try, and fail, at the Bay of Pigs, to win it back. Granted, the United States for a century has browbeaten and arm-twisted governments, organised coups, fought wars by proxy; yet to these charges it could reply like Robert Clive, an 18th-century British proconsul accused of self-enrichment in India: “By God, I stand astonished at my own moderation.”

Virtuous, maybe; wise, certainly. After centuries in which imperial territory and commerce went together, the United States has found how to enjoy imperial status without (mostly) the pain of empire: through the power of the purse and the media, free trade, trustworthy money and skilled armies not of colonial garrisons or officials, but of scientists and technicians, executives and entrepreneurs. And salesmen. In *Fortune*’s list of the world’s 500 leading companies, ranked by turnover, 185 are American.





Millennium issue: LEXINGTON

The voice of the victorious Confederate States

Dec 23rd 1999

From The Economist print edition

PRESIDENT Jefferson Davis is angry. A thin, dyspeptic man faultlessly dressed in black broadcloth, he leans over his desk, and brushes slavery impatiently aside. "No subject", he insists, "has been more generally misunderstood or more persistently misrepresented." The war of southern independence, which has left him president of one of the richest countries in the world, "was not the consequence of any difference on the abstract question of slavery." It was merely the southern states' successful "defence of an inherent, inalienable right to withdraw from a union into which they had, as sovereign states, voluntarily entered." The war, he claims, "would have manifested itself just as certainly if slavery had existed in all the states."

This legalistic interpretation of one of the greatest upheavals of the century is characteristic of the man. Austere, rigid and humourless, he tends, as one of his critics has put it, to "think in abstractions and speak in platitudes." Blinded in one eye by persistent neuralgia, he seems similarly blind to the complexities of human behaviour. To the president of the Confederate States, ideas, not those who hold them, are what matter.

Unlike his great contemporary, the late Abraham Lincoln, he seems unable to endure criticism or inspire loyalty. His vice-president, Alexander Stephens, privately calls him "weak and vacillating, timid, petulant, peevish and obstinate." Emaciated in appearance, but possessed (one is told) of iron self-control, he seems to prefer winning an argument to winning a battle.

And this is the man grappling with the vast and unexpected consequences of General Robert E. Lee's victory at Gettysburg, seven years ago. With its free, white population of nearly 7m, and a still formidable military force, the South seems well able to look after itself, especially given the isolationism growing in its defeated rival to the north. It dominates international trade in cotton, and it is industrialising fast. Despite the secret flight of thousands of its once 3 1/2m-4m black labourers every day, the South's economy is recovering rapidly from the war. As Mr Davis puts it with careful pride, "manufacturing industry has become more extensive than ever before and in many branches more highly developed."

But while there is security at home, abroad there seems nothing but trouble. President Davis turns to the map on the wall behind him. "The most delicate and difficult of questions", he says, pointing to Mexico, "is the adjustment of a boundary between us. Many eyes are fixed upon our minister in Mexico. We know the influence which Great Britain exercises there. We should not doubt that the prospect of a war between England and the United States, would serve to revive the former hopes and renew the ancient enmity of Mexico."

He has good reason to fear the growing power of the Mexican government. It has been transformed by the Confederate victory. Before the war, the influence of Mexico appeared to be in abrupt decline. It lost Texas to the then United States in 1845, followed by California and the Utah and New Mexico territories three years later. But the North's defeat has changed everything. Though the victorious South has been strong enough to hold on to Texas, the resurgent Mexicans have been able to retake the rest of their lost territory. They have recaptured the more important half. The possession of California means that Mexico, not the United States, now benefits from the discovery of gold there 20 years ago. The Mexicans have also recently bought Alaska from the Russians.

All this is changing the strategic balance of North America. Instead of having one dominant power (the United States), and two smaller ones (Canada and Mexico), there are now four emergent rivals, more equal—though the North still dominates economic- ally—plus an area of uncertain conflict.That area runs from the prairies to the Rocky mountains. Lacking the will to assert itself to support white settlers, the North has more or less abandoned its claims in this area, leaving it to be disputed by tribes of plains Indians and their herds of bison.

Considering how dramatic Mexico's recovery has been, it may seem understandable that Mr Davis is prickly about any British action that might help the Confederacy's south-western neighbour. Nevertheless, his warning is another example of that rigid disputatiousness, that conviction that he is right and everyone else wrong, which marks his presidency. For Britain is his most important European ally. The studied neutrality Britain maintained during the war—a policy Mr Davis calls a fake, "so shaped as to cause the greatest injury to the Confederacy"—is forgiven, if not forgotten. Now, driven by economic self-interest, the cotton-mill owners of Lancashire have persuaded Mr Gladstone to make common cause with the plantation owners of the deep South.

One result has been a flood of foreign investment from Britain, now the largest economy in the world. Another has been the withdrawal of Russian forces and interest from Central Asia. This region is one of the few places on the earth where conditions are right for growing cotton; the tsar dispatched soldiers there in the hope of capitalising on the cotton blockade that the North imposed during the war. Southern victory has therefore undermined the economic rationale for Russian expansion to the south-east.

A third result is that the North is now sandwiched between a British ally, the South, and a British colony, Canada. This is encouraging President Horatio Seymour's defensive isolationism.

The upshot of that remains to be seen. But if Mr Davis is anything to go by, all American states are likely to be preoccupied with their continental rivalries for the foreseeable future. Asked about the recent surrender of the French army and emperor at Sedan to the forces of Prussia, the Confederate president says his country will not interfere. It will remain neutral in Europe—just as Europe remained neutral during America's civil war. It is, he says, "the duty of neutral states to recognise with respect any new confederation that independent states may think proper to form."

In other words, anyone thinking that Americans might one day intervene in a European conflict must think again. Mighty the new world is, united or even, as now, divided. But do not expect it to sally forth to redress the balance of the old.

Millennium issue

The conquest

Dec 23rd 1999

From The Economist print edition

There were great empires before the Europeans arrived

1519

LED by four horsemen in full armour, the small column of Spanish infantry, arquebusiers and crossbowmen, with their leader, Hernan Cortes, and further horsemen in the rear, marched along the narrow causeway across the shallows of Lake Texcoco. They were heading for the walled towers of the entrance to Tenochtitlan, the mighty capital of the Mexica; as we now call them, the Aztecs.

There Cortes and his 250 menmet their target: Moctezuma, the Aztec ruler, bedecked with a splendid feather head-dress, richly-decorated mantle and gold-soled sandals encrusted with jewels. A generation after Colombus had landed in Hispaniola, the Spaniards in 1519 had penetrated to the heart of the most populous and wealthiest civilisation in the Americas.



For three months, as the Spaniards came inland, Moctezuma had been paralysed by indecision: how should he handle them? He was constrained by custom, religion and superstition. In Aztec Mexico, ambassadors (as Cortes falsely claimed to be) were entitled to hospitality; war was ritualised, and normally began only after elaborate diplomacy.

The conquistadors played by different rules. After being lodged in one of Tenochtitlan's whitewashed palaces, they imprisoned their host, and killed hundreds of unarmed nobles. Led by Cuauhtemoc, Moctezuma's nephew,

the Aztecs rallied. Though reinforced, the Spaniards were besieged, then routed as they fled. They were soon back, and laid siege in turn. By August 1521, they were masters of a ruined city, its population cut to a third of its pre-war 200,000.

A decade later, an even smaller Spanish force similarly struck the second great American empire of this millennium, that of the Incas. Francisco Pizarro too followed a code different from that of his opponents. He invited Atahualpa, the Inca ruler, to the Spanish camp in Cajamarca, in today's northern Peru, and then ordered an attack against the mostly unarmed Inca escorts. The Incas stripped temples of their gold wall-plates and ornaments to pay the ransom for Atahualpa's release. The Spaniards melted down 11 tonnes of gold objects, and then, after a hasty "trial", killed him.

The Spaniards won because they had better tactics

Here too they faced resistance for almost a year. Indeed, the fierce topography of the Andes allowed the rump Inca mini-state of Vilcabamba to survive until 1572. But by the 1540s, Spain had conquered the main population centres of Central America and western South America. The Portuguese would penetrate Brazil far more slowly.

The Spaniards won because they had better tactics—Aztecs in battle tried to capture, not kill, their opponents—and technology. Horses, mastiffs and guns terrified Aztecs and Incas armed with slings, stonetipped clubs and spears (though Inca archers did better). The Spaniards had two other crucial advantages. One was the diseases they had brought: the Aztec forces in the battle for Tenochtitlan were ravaged by smallpox. The second arose from the internal weaknesses of the two native-American empires.

These looked strong. Both were relatively recent. Tenochtitlan, founded in 1325, had achieved first place among the city states of Mexico's central valley a century later, before swiftly extending its sway to both coasts and south to Guatemala. The Incas, starting near Lake Titicaca, had moved to Cuzco, and then embarked on imperial expansion only a century or so before Pizarro's arrival.

Both empires drew on previous cultures. From the Mayas and Toltecs, the Aztecs had inherited hieroglyphic writing, calendars and some mathematics, and religious beliefs. Andean society had developed fine textiles, and other crafts. The Incas added meticulous organisation, in road-building, management of food stocks and accounting alike. Neither society knew the wheel, but both included skilled herdsmen and farmers. The Aztecs cultivated *chinampas*, "floating" islands of mud and reeds. The Incas used canals to irrigate their coastal deserts, and terraced their Andean mountainsides.

Both empires had a weak point: their resentful subject peoples

Yet both empires had a weak point: their resentful subject peoples. The Aztecs extracted tribute from these, and worse: over time, mass human sacrifice came to occupy a central place in Aztec religion, an instrument of control in what had become a reign of terror. The Incas were less given to human sacrifice, but exacted labour service. Cortes found ready allies: the Totonacs of Mexico's gulf coast and others supplied him with several thousand troops and bearers, as well as food. And Pizarro found the Inca empire riven by civil war after the death (probably from smallpox) of Atahualpa's father.

Greed, faith and killing

Why were the Spaniards there? In part, for profit and precious metals. ("I and my companions suffer from a disease of the heart that can be cured only with gold," Cortes told envoys of Moctezuma.) But they were also driven by the militant Catholicism forged in the centuries-long campaign to drive Islam from Spain. In 1493 a Spanish pope had granted Castile exclusive right of conquest in the Americas, west of the Portuguese possessions, and with it the obligation to convert the inhabitants to Christianity.

The conquistadors did both, appallingly. To cow their subjects, Cortes and others, sometimes abetted by priests, on occasion massacred civilians, or burned them alive. The indigenes died from war, disease, overwork and hunger caused by the disruption of their traditional farming. Estimates of Mexico's population on the eve of the conquest range from 12m to 25m; by 1568, it was under 3m. Peru had 9m people in 1532, under 1.5m in 1570. Only later did the figures grow again, as rape, concubinage and intermarriage created a mixed-race population.

The Spaniards often left local rulers in place, while extracting tribute and labour service from the shrunken native peoples. They found their own freedom of action limited by royal officials and judges, and at times by conscience-stricken churchmen such as Bartolome de las Casas, a landholder turned Dominican friar. The first law to protect the "Indians" was brought in in 1542.

The conquistadors were mainly hidalgos—minor or aspirant gentry—and artisans from Spain's rougher edges. They saw no glory in the family farming on which Britain's north American colonies would be built; nor did the land or climate favour it. Spanish America became a place of large landholdings, their owners living in its Spanish-style grid-patterned towns. Periodic mining booms stimulated further immigration. The surviving Amerindians continued to practise communal, near-subsistence farming and hung on to what of their culture they could. They took to Christian ritual without abandoning their own gods. Slowly a Spanish American society emerged.

Millennium issue: Freeing Spanish America

Mixed blessing

Dec 23rd 1999

From The Economist print edition

1822

DURING two days in July 1822, in a house in Guayaquil, a Pacific port of sticky tropical heat, Simon Bolivar and Jose de San Martin met for the first and last time. Each had come far: in an unco-ordinated pincer movement, their troops had wrested much of South America from Spanish control.

In 1817, San Martin had led his men from Argentina through the Andes to conquer Chile, thence organising a seaborne expedition to Peru. Bolivar, after a long struggle in Venezuela, had outflanked the Spanish forces and, marching over flooded lowlands and Andean heights, had taken Bogota.

The Spaniards still controlled most of Peru. Who should take them on, and how, was one issue for the two liberators. Another was how the new free states should be governed. As republics, said Bolivar, an egocentric aristocrat. Invite European princes to take their thrones, said San Martin, Argentine-born but for 20 years an officer in Spain's European wars. Bolivar won his point. San Martin retired quietly to a long exile in Europe.

By 1825, Bolivar had ousted the remaining Spaniards from Peru and Bolivia. After 15 years of struggle, all of Spain's mainland possessions were free (Cuba and Puerto Rico remained colonies until 1898). In a world of mainly unfettered monarchy, some 17m people had been won, in theory at least, for the principles of representative government.

Imperial Spain had long been in decline. Royal attempts at reform in the late 18th century had done little but irritate colonial elites. Their chief grievance was the monopoly of trade and public office held by the Spanish-born, at the expense of locally born *criollos.* Another was added after Spain went to war with Britain in 1804, and tried to increase its colonial revenues, especially from Mexico.

Recent events and ideas inspired some *criollos*: independence and republicanism in the United States, the French Enlightenment, British liberalism. What set spark to tinder was the abdication of Spain's King Ferdinand VII, after a French invasion in 1808. Though Spanish liberals formed a government of resistance, royal authority had been undermined. Starting in Caracas and Buenos Aires, *criollos* set up governing juntas across the Americas. Often these proclaimed loyalty to Ferdinand. But with Spanish royalist officials refusing any autonomy, calls for independence soon followed.

Rarely did this involve popular rebellion. Mexico was the main exception: there, in 1810-11, Miguel Hidalgo, a parish priest, raised the Indian masses, and handed out land confiscated from whites. But he was defeated. His radicalism scared *criollo* landholders, and Mexico declared independence only in 1821, in conservative reaction to a liberal Spanish government. The *criollo* elite everywhere feared the poor masses of Indians and black slaves (especially after the bloody 1790s rebellion of the 1/2m slaves in France's St Domingue led to the birth of black-run Haiti there in 1804). Politically radical, the new leaders, with rare exceptions such as Uruguay's Jose Artigas, were socially conservative. The *criollos* wanted political power so that they could keep the old social order intact.

The new states paid lip service to republican ideas of equality before the law. The import of slaves was generally banned; blacks, notable in the armies of both San Martin and Bolivar, were freed; but slavery was not at once

outlawed. In most places, the Indian tribute and forced labour were ended, but not the serfdom of Indians on the large estates. The colonial legacy of land inequality that these typified was preserved. In the Andes it was aggravated by well-intentioned liberalism: decrees granting Indians individual possession of communal land, and so the right to sell it, led to large areas being gobbled up by *criollo* landowners.

The new republics faced other problems. How should they be governed? Liberals favoured elected congresses, with a franchise normally limited to property holders; and, often, a loose federal structure. Most conservatives wanted strong and centralised government. ("America can be ruled only by an able despotism," said Bolivar, who died in 1830, by then a pessimistic conservative heading for exile.) By the 1830s conservatives were in the ascendant. In Mexico in 1864, with French aid, they even briefly installed a monarch, Maximilian, a Habsburg prince, deposed and executed in 1867. (And Brazil remained an "empire" under descendants of Portugal's royal family until 1889.) Liberals regained the upper hand later in the century. The argument still rages.

The new states faced another problem: their backward economies, further weakened by war. Most declared trade "free" (ie, no longer a Spanish monopoly), but often with high tariffs. Industry was slow to develop; the region depended on exports from its mines, plantations and ranches. In 1822, Chile became the first of many countries to seek a loan in London; defaults would soon follow.

Large armies were a costly burden. With independence came two of Latin America's lasting political scourges: militarism, and the *caudillo*, the strongman. Bolivar's dreams of continental integration yielded to parochialism: the Central American Federation of 1825 was five countries by 1838.

"Independence is the only benefit we have gained, at the cost of everything else," lamented a disillusioned Bolivar. A century later, liberation's unfinished business bred a new cycle of revolutions and a new kind of *caudillo*. Starting in Mexico, but including Brazil's Getulio Vargas, in 1930-45, and Argentina's Juan Peron ten years after him, these combined assertive nationalism with the political incorporation of sections of the excluded masses. They solved some old problems, but created new ones.

Millennium issue: Inequality

Che says it all— nearly

Dec 23rd 1999

From The Economist print edition

1952

THE societies of Latin America have long been riven by wild inequalities. Strict social hierarchy, fierce racism and division of the sexes are as much part of the continent's history as any blending and mixing among immigrants and natives. Can that explain the grossly uneven living standards, education and prospects of today?

In 1952 an Argentine doctor—the young Che Guevara, touring by clapped-out motorcycle and rickety lorries—noted the misery of Amerindians in Chile, Bolivia and Peru. Many, with ragged clothes and calloused bare feet, he wrote, "give the impression that they go on living simply because it's a habit they can't give up." A habit indeed: the division between a few who live well and most who don't was ingrained by Indians as well as by invaders. Look at the Incas, he said, and their famed mountain city, Machu Picchu:

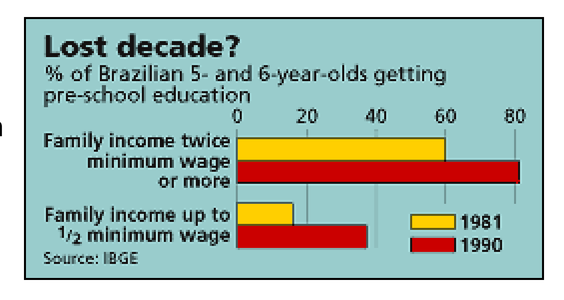
You can see here the difference between the various social classes; each of them occupied a distinct place according to category, more or less independent from the rest.

Inca chiefs had used slaves to build palaces, roads and temples. The conquistadors introduced a form of rotating slavery to get labour for Bolivia's rich silver mines. Independence brought no huge change. Guevara's diaries again, on Bolivia in 1952:

One thing seems not to have changed over the centuries in this part of the world: the poor and downtrodden have remained just that. It can hardly be said that those at the bottom of Latin America's heap, whether they be wretched souls in city slums today or pitiful farmers in of previous centuries, have had much to cheer about.

Within days, by chance, Bolivia was in revolution. Its poor even gained a little.

Race plays no small part. Amerindians massacred by thousands in Central America's 1980s civil wars, their kin brutally suppressed in Chile, Brazil's Amazon tribes displaced by loggers, freed slave communities living in squalor in northern Ecuador: the continent's history tells much of social strife and suspicion between ethnic groups. Go to a football match today in Ecuador's capital, Quito, and you can see black players who must endure hurled bananas and jeers.



So does it all spring from history? No. What Guevara didn't see so clearly was the state of women. In most of the world, poor women, with fewer rights and less education even than their men, are nearly always at the bottom of the heap. Still more so, you might expect, in famously macho Latin America. Yet in well-run capitalist Costa Rica and socialist Cuba alike, women can expect to live to 79, five years longer than men, much as in Europe. In Colombia, Venezuela, Uruguay and Guyana the proportion of girls enrolled in secondary school is now ten percentage points or more higher than that of boys. Literacy among women matches that of men. One inequality at least has been tackled.

So can that between rich and poor. In the 1980s, the region's allegedly "lost decade", the crucial variable, education, improved everywhere, and even more so for the poor than others. By 1990, Brazil's poorest five- and six-year-olds still were only half as likely to be in pre-school as better-off ones; but that was better than the quarter as likely of 1981.

And of course politics can challenge the past. Haiti has a ghastly history and was left dirt-poor and full of inequality by the dictatorial Duvaliers. It is so still. Cuba's history has been grim too, but its current boss will leave a country not rich but one of far less inequality than Haiti's or than he took over. In Cuba, Guevara's answer to inequality, communism, in some respects has worked. Too bad other countries were mostly slow to try the mixture of capitalism and social democracy which, at least in Europe, works better.

Millennium issue: From past to future

Dreaming up Brasilia

Dec 23rd 1999

From The Economist print edition

1957

ONE day in the 1950s, Lucio Costa, a Brazilian architect, had a dream, of a bird or maybe a jet plane streaking across the sky. He wrote down his vision, scratching a broad cross on a piece of paper, hastily filled in details and rushed to the authorities in Rio de Janeiro, Brazil's then capital, who were seeking proposals for a new one. His dream brought to life what Le Corbusier, the French modernist architect, called *la ville radieuse* —a garden city, lots of greenery, a lake, slab skyscrapers raised on posts, all wrapped in ribbons of asphalt. Costa's design for an aeroplane-shaped city won the contest.

He and Oscar Niemeyer, the architect he chose to design the buildings, were in thrall, like Le Corbusier, to the motor car, for the 1950s an emblem of the future. Express lanes and feeder roads loop through and around Brasilia, rarely hampered by stop lights or street corners. But the city is more than a hymn to the motor age. Few architects have had such fun with reinforced concrete as Niemeyer. His buildings swoop and soar with vertiginous curves and startling precipices that seem to defy gravity.

Politically, Brasilia was the work of Juscelino Kubitschek, the ambitious president who meant to make Brazil grow "50 years in five", to show the world (and itself) that here was no relic, as Rio de Janeiro is, of the colonial past, no random collection of peoples—Brazil's citizens are as diverse as those of the United States—but a nation, looking ahead.

The new city might have stayed a dream. But no. Earthmovers were flown in, workers recruited from the poor north-east, and in three frantic years Brasilia was thrown together. At a price, but few cared. These were bold, self-confident days when Brazil jewelled itself with factories, farms and hydro-electric dams. Bossa nova was playing on the world's new hi-fis, and Pele on the football field. Brasilia would be "the capital of hope". Critics saw an outsize monument to political ego, corruption and deficit spending. "Miles of jerry-built nowhere," sniffed one. "Fantasy Island," it was branded. "I'd rather be poor in Copacabana," jeered a samba lyric.

Many Brazilians, from faded beach-side Rio or Sao Paulo, Brazil's pullulating commercial capital, still think that way. So do the politicians, part-timers on the make, many of them, who reluctantly fly in and out; woe betide the pedestrian who comes between the home-going congressman and Brasilia's airport on a Thursday afternoon. Yet residents see a sane, pleasant family town, with low crime, high literacy and good jobs.

Brasilia is both the glory and the grave of the modernist idea. It never became the egalitarian utopia that the romantic Costa and the communist Niemeyer dreamed of. The middle classes live well in the central zone, leaving the tattered "satellite cities" for their maids, gardeners and bricklayers. It did in time serve as the springboard to the hinterlands that Kubitschek imagined, but Brazilians were on the move already. Yet there it is, showing that ordinary people, by themselves, can make sense of a flawed dream. And to the world, "Mock if you like," the city seems to say, "but here I am, the voice of 160 millions, and you'd better listen to us."




Millennium issue

East meets West

Dec 23rd 1999

From The Economist print edition

China's had been the greatest civilisation on earth. Then the Europeans arrived. Just one more bunch of barbarians, it thought. It was to learn better. One episode in 1860 symbolises two centuries of Asian history

1860

THE opium war of 1840-42 and the Treaty of Nanjing that flowed from it are generally seen as the greatest of China's many humiliations at western hands. That is certainly how they are represented by China's Communist rulers today. But it is not how they were seen by the Qing emperor's officials at the time. Only when British and French troops in 1860 looted and burned the Summer Palace, the (European-designed) imperial pleasure-dome outside Beijing, did even some of the dynasty's more enlightened literati realise that the centuries-old order had been turned upside down.

The opium war was launched by the British in pursuit of their claimed rights of free trade, in particular the right to feed Europe's taste for tea by feeding the addiction of some Chinese to Indian opium. The resultant peace treaty gave the British almost all they wanted. It allotted them five "treaty ports" through which they could conduct commerce with the Celestial Empire. Britain's seizure of Hong Kong was formalised, in perpetuity. Stiff reparations for war damages were to be paid—by the Chinese. Guang-zhou (Canton) would lose the lock on foreign trade that it had held for centuries (and which recently had brought a vast fortune to Howqua, the leading comprador—a state-authorised go-between—in the trade). Fantastic profits beckoned for the foreigners.

Yet for all the humiliation of the war and the treaty, the Qing court treated the affair as if these outsiders from Europe were just another breed of pesky barbarian. An inertia bordering upon stupidity convinced officials that, in the emperor Daoguang's own words, the Treaty of Nanjing was just a mechanism that would "permanently prevent further troubles from happening."

Officials argued that the treaty had solely to do with economic relations. High officials really should have nothing to do with the barbarians' affairs. In 1846 the imperial commissioner even proposed that the best way of handling foreigners was to cut off all channels through which they could request interviews with the court. Even as trade opened, foreign-policy doors closed.

If there was a precedent for the Treaty of Nanjing, indeed, it came from trading rights granted in China's far west, in Kashgar and Yarkand, to the troublesome khanate of Kokhand in 1835. Had Henry Pottinger, Hong Kong's second British governor, known this, he might have understood the behaviour of the noble Qiying who, entrusted by the emperor to deal with the westerners, even visited the now-colony. He coined a piece of Chinglish to express the depth of his friendship with Pottinger: "yin-di-mi-te", intimate. True, Pottinger was not offered, like earlier barbarians, a virgin princess. But Qiying did insist that he himself should adopt the governor's son and take him back to Beijing. He was politely informed the lad had first to finish his schooling in England.

Yet further troubles did happen. The British argued that, since the United States' treaty in 1844 with China could be renegotiated after 12 years, so could the Nanjing one, offering the prospect of a further opening up of China. To press the point, in 1858 British forces stormed the forts of Dagu, at the mouth of the Huai river, and

threatened to move on Tianjin, two days' march from Beijing. The new treaty that followed this threat set humiliating terms: a British ambassador in Beijing; the open preaching of Christianity in China and unlimited travel for those Britons with passports; six more coastal treaty ports immediately, plus four extra ones on the Yangzi river once the Taiping rebellion was put down; all official correspondence between the two countries to be in English; Chinese transport for opium into the interior (this despite the Chinese ban on opium); and, of course, more reparations.

What stuck most in Chinese craws was that resident British ambassador. To press this point, once again the British attacked the Dagu forts. This time they were repelled. So in the autumn of 1860 Lord Elgin, leader of the first expedition, returned with an overwhelming British-French force. When a messenger that he had sent under flag of truce was killed, his troops burnt the Summer Palace to the ground. Elgin spared the Forbidden City, reckoning that its destruction would be a "disgrace"—to the Chinese, that is—"so profound that the Qing dynasty would inevitably fall."

The emperor of the day, Xianfeng, having fled to his ancestral grounds in Manchuria, his half-brother, Prince Gong, was left to negotiate from a hopeless position. Yet another treaty guaranteed the resident ambassador, ceded Kowloon—a bit of the mainland opposite Hong Kong island—to Britain, and compelled China to let Chinese coolies migrate on British ships. At last the empire had to acknowledge the existence and force of the outside world.

The force was momentarily useful: western troops helped imperial ones finish off in 1864 the Taiping rebellion, a vast and weird affair—the rebel leader thought himself a new version of Christ—which in its 14 years had cost maybe 20m lives. The dynasty tottered on (till 1912 indeed, run for most of that time by the formidable Cixi, the "dowager empress", a concubine of Xianfeng who had installed her six-year-old son, and later an even younger nephew, on the throne). But as the 20th century came in, so into Beijing again did a fresh foreign army, to defend diplomats against the anti-foreign Boxer movement, which Cixi had encouraged. China was further eaten into.

True, the westerners' bloodshed and looting were nothing to the Japanese atrocities in China in 1931-45; and the West then, belatedly, came to China's aid. But as the last European toeholds, Hong Kong and Portuguese-run Macau, reverted to China in the 1990s, its people and rulers alike had not forgotten the lesson of two centuries: learn from and match the West in ingenious manufactures, but resent and distrust it as ever.



Millennium issue

Britons bearing gifts

Dec 23rd 1999

From The Economist print edition

1792

IN 1792, Britain's King George III sent a trade mission to China. The Emperor Qianlong was little more impressed than had been his Mongol predecessor in 1342 by an emissary from Pope Benedict XII. He gave George's envoy a message to take back:

You, O king, live beyond the confines of many seas; nevertheless, impelled by your humble desire to partake of the benefits of our civilisation, you have despatched a mission respectfully bearing your memorial... To show your devotion, you have also sent offerings of your country's produce. I have read your memorial; the earnest terms in which it is cast reveal a respectful humility on your part which is highly praiseworthy.

Swaying the wide world, I have but one aim, namely, to maintain perfect governance and fulfil the duties of the state. Strange and ingenious objects do not interest me. I have no use for your country's manufactures. It behoves you, O king, to respect my sentiments and display even greater devotion and loyalty in future, so that by perpetual submission to our throne, you may secure peace and prosperity for your country. Tremblingly obey and show no negligence.

Alas for China, among the ingenious manufactures in which the British excelled were ships and cannon.




Millennium issue: Imperial China

The kiln of civilisation

Dec 23rd 1999
From The Economist print edition

1000s

THE early capital of China's Song dynasty, Kaifeng (how many westerners have even heard of it?), was in the 11th century the greatest city on earth. Its population was close to a million. The city served, as one later historian describes it, as "both court and emporium", ringed by a double curtain of defensive walls, "square for cosmic order". Hangzhou, the watery city further south to which the dynasty migrated when Kaifeng was sacked by Jurchen nomads from the north in the 1120s, was even richer and bigger: over 1m merchants, artisans, officials, scholars, servants and slaves. No wonder Marco Polo (or his unacknowledged source?) was impressed. The Venice of his day had little more than 50,000 citizens.

It was thanks to Kaifeng's demand and inspiration that 11th-century China saw an extraordinary flowering in ceramics, as kilns and workshops sprouted in and around the capital, as well as elsewhere in Henan province and neighbouring Hebei. The art and technique of porcelain then reached a high point—some connoisseurs think its peak—in the 12th century, around Hangzhou, and at the huge imperial pottery works of Jingdezhen in Jiangxi province. Not until the early 18th century would any European produce true, hard-paste porcelain, and even then for long afterwards Europe eagerly imported the Chinese product.

It is usually said that the pottery works, notably at Jingdezhen, toiled at the emperor's beck and call. That is true, up to a point. Certainly the emperor was at times the biggest customer, and sometimes his demands were too much to bear. In the early 1600s thousands of workers at Jingdezhen rioted over low pay and an order to meet a greatly increased quota of the delicate "dragon bowls" made for palace use; one man threw himself into the kiln to emphasise the workers' plight. By then, the imperial potteries were in the hands of court eunuchs enjoying a greatly increased bureaucratic reach. Even after the Qing dynasty collapsed, and China was declared a republic in 1912, the court could still greatly affect demand: General Yuan Shikai, a would-be emperor, saw fit to order a porcelain dinner-set of 40,000 pieces.

Yet imperial orders were not the only or even the main source of demand that pushed ahead the flowering of Chinese porcelain. For Song China saw an extraordinary intellectual and economic flowering too, and a rich urban class of scholars, landowners and merchants sprang up, eager to own the finest porcelain and other works of art.

Whence the wealth? Abundant manpower and skills were there for those prepared to organise them. The waterways of south-central China represented a vast and largely safe network for inland trade. And a seaborne trade developed from that, as the desire to export Chinese porcelain and silks brought forward developments in ship design and in navigation—watertight bulkheads, stern-hung rudders, the use of compass and chart—that Europeans adopted only centuries later. No dynasty had been so cosmopolitan and outward-looking. Trade was better, said the Song emperor in 1145, than taxing the people.

This maritime bent lasted for three centuries more. Even the Mongols, sweeping in off the northern plains, took to the sea in their attempts to conquer Java and Japan. The years 1410-20 saw the treasure-fleets of the Ming dynasty, vanquishers of the Mongols, sailing far abroad. Admiral Zheng He led one expedition to East Africa, with 62 junks (amongst them the largest ships ever built till then), 225 support vessels and, reportedly, 28,000 men. Such expeditions brought exotica back to China; witness the giraffe once presented at the Ming court. They left Chinese porcelain as far afield as the Great Zimbabwe empire. At Kilwa, that great East African

emporium of trade, the mosque's dome was covered with Chinese blue-and-white porcelain bowls before Europe had even woken for its Renaissance.

Millennium issue: The Mongol empire

One steppe back

Dec 23rd 1999

From The Economist print edition

THE Mongol horsemen had swept westward from what is now Russia into Hungary, Poland and eastern Germany. A year later, in 1242, to European bafflement and relief, they turned round and went back again. The main force, led by Batu, a grandson of the legendary Genghis Khan, retreated to the Black Sea steppe. Batu's cousin Guyuk, joint leader of the expedition, carried on still farther eastward, making for the Mongol capital at Karakorum. The conquest of Europe could wait: the "great khan" Ogedei, son of Genghis and father of Guyuk, was dead, and the Mongol empire, stretching from northern China to southern Russia, needed a new boss. Guyuk proposed to stake his claim.

1242

The process would not be straightforward. The Mongol chieftains were eager that the next great khan too should be a blood-descendant of Genghis. But there were no precise rules of precedence, and the imperial family was numerous. For outsiders, much hung on the choice. Ogedei had ordered the European adventure, and some members of the ruling family, notably Batu, still supported it. But others, perhaps including Guyuk, had come to see it as a foolish distraction from the Mongols' historic aim of conquering and looting all China.



Certainly, the new great khan would have good cause to reassess Mongol strategy. The empire was stretched thin across the Eurasian land mass. The conquest of China had grown markedly more demanding. Genghis Khan had subdued China's western provinces almost unresisted in 1209. But it took him and Ogedei after him another 25 years to complete a conquest of the north. The rich southern provinces looked harder still. Their river-and-ricefield terrain was unfamiliar, and unfriendly, to the horseborne Mongols. Their Song rulers were wily tacticians. The conquest could (and in fact did) take several decades.

Hence the attraction of pursuing the advance into Europe. Its lands were poor and backward when measured against China. But its Christian armies looked easy to defeat. There was trade, which could be taxed for silver. And the conquered Europeans would add to the Mongols' stocks of serfs and soldiery. Besides that, delaying the

assault on southern China for a few years would give more time to assimilate the northern provinces into the Mongol empire, reducing the risk of an insurrection there, were the campaign in the south to go badly.

On the other hand, a European expedition would serve mainly Batu's private interests. Genghis Khan had given Batu's branch of the family suzerainty over new western additions to the empire. Sceptics could well ask why the empire should rally to invade Europe just for Batu to take the profit.

Personal antagonism between Guyuk and Batu went back many years. Its depth may explain why, while Guyuk rode on eastward, Batu stopped on the Volga. He may well have reckoned that Guyuk would indeed win the top job (as, after a short interregnum, he did) and that it would be wise to be at a safe distance when that happened. Perhaps this suited both men: let Guyuk become number one, while Batu would keep his command, but settle permanently on the Volga. The pasture was fertile, and there were easy revenues for the taking from Russian cities and Caspian caravans. On its own, his army—the "Golden Horde", as awestruck local Slavs were later to nickname the newcomers—could dominate the region.

And thus, crucially for both Europe and Asia, it turned out. Though Guyuk was preparing for war with Batu when he died at Samarkand in 1248, the empire turned east. The next great khan but one, Khubilai, moved his capital to Beijing and in 1279 the remnants of the Song dynasty went under (literally, in a huge sea-battle).

Yet the Mongol triumph was short-lived. The western khanate, soon more Turkic (and Muslim) than Mongol, was smashed by a Moscow-led alliance in 1380. In China, Mongol rule was torn by repeated tensions between those faithful to their nomadic traditions and those ready to assimilate with the Chinese. In 1368 a Chinese rebel became the first of the Ming emperors; and the dynasty, from Manchuria, that succeeded these in the 17th century brought all Mongolia under Manchu control.

Millennium issue: Muslims and Hindus

Multicultural Akbar

Dec 23rd 1999

From The Economist print edition

1556–1605

INDIA has always been a spiritual rainforest, teeming with religions and their mutations. Fittingly, its greatest rulers have been as notable for their spiritual experiments as for their political ones. Ashoka, who ruled the Mauryan empire, India's first, at its apogee in the third century before Christ, was a convert to Buddhism. Jawaharlal Nehru, India's political leader to independence from British rule in 1947, and its first prime minister, was born into a high-caste Hindu family and became a resolute secularist. Mahatma Gandhi, his saintly fellow-worker for independence, was a devout Hindu, but challenged the orthodox with his campaign against untouchability. When political genius encounters India's sectarian profusion, it seems to breed a wayward spirituality.

No ruler took more liberties with his religion than Akbar, the greatest of the Mughals, the Muslim dynasty that dominated India between the early 16th and 18th centuries. Like Ashoka and Gandhi, Akbar constructed a religious ideology that served to hold together a diffuse polity as it fed his own soul.

It began with pragmatic policies of tolerance. Akbar had inherited the throne, at the age of 13, in 1556. In 1579 he abolished the *jiziya*, a tax imposed on all but the poorest non-Muslims. This was the most notable in a series of measures to recruit the Hindu majority and others to the cause of unifying and expanding his empire. He could be ruthless: his troops massacred 20,000-25,000 non-combatants after a four-month siege of Chitor, a nearly impregnable Hindu fortress in Rajasthan. But he preferred incentives to coercion. He defeated the war-like Rajputs, but gave them rank and married their princesses, who were permitted to conduct Hindu rites in the harem. The Mughal-Rajput alliance was a bulwark of his empire.

Akbar's liberalism in religion buttressed his other achievements. His generalship widened and enriched the Mughal empire. His administrative and fiscal innovations underpinned it for a century after his death. Not least, he fashioned a multicultural nobility into a kind of meritocracy, through a system of ranks dependent not on inheritance but on imperial favour.

Yet it is Akbar's religious tolerance that marks him—a fierce autocrat in politics—for his special place in history. It sprang as much from his character as from calculation. He was curious. Wondering whether speech was learned or innate, he had several infants reared in silence to find out. He is credited with innovations in textiles and artillery alike. Unable to read, perhaps because of dyslexia, he loved learning and disputation. He was subject to bouts of melancholy and what were probably epileptic fits early in life. He saw these as spiritual experiences; maybe they gave his curiosity a religious twist.

As his reign progressed Akbar moved ever further from Islamic orthodoxy. He built a capital, Fatehpur Sikri, around the tomb of a Sufi (Islamic mystic) saint who had prophesied the birth of his heir. Later he took to inviting clerics from various religions, including Portuguese Jesuits from Goa, to debate their faiths.

He collected the opinions of everyone, especially non-Muslims, retaining whatever he approved of,

lamented a Muslim historian at his court. The Jesuits were no happier:

The king cared little that in allowing everyone to follow his own religion he was violating all,

one of them wrote. They saw in him

the common fault of the atheist, who refuses to make reason subservient to faith, accepting nothing as true which his feeble mind cannot fathom.

"If this is the definition of an atheist, the more we have of them the better," Nehru commented acidly 350 years later.

Eventually, Akbar came up with his own "religion of God", more a fraternal order, headed by himself, than a religion, based on a creed of harmony among peoples and a practice that involved making disciples of his leading nobles. Unsurprisingly, Muslim clerics saw this as blasphemy.

Eventually, it became official policy to discourage, if not to prohibit, Islamic forms of prayer. Akbar paid the price in an abortive rebellion by his son, claiming to be a defender of the faith. Akbar softened towards Islam thereafter, and is thought to have died, in 1605, a Muslim, not an apostate.

His descendants had learned the lesson—the wrong one. Successively, they became ever less tolerant. A century later, in 48 years of rule, his irreproachably pious and deeply bigoted great-grandson Aurangzeb tore down Hindu temples and revived the *jiziya*—and a Hindu consciousness that after his death was to help pull the Mughal empire apart and let in the British.

They, like Akbar, tried to deal equally with their diverse subjects. But the tensions remained; the Indian cliché that these were largely due to a British policy of "divide and rule" is a self-excusing fantasy. As British rule faded, Muslim leaders demanded and in 1947 got a country, Pakistan, of their own. India's new rulers stuck to their belief that the state must remain above religion. Even so, Hindu hegemonists have recently come to the fore there.

Yet Akbar's fusion of religions is not quite dead: there is a Hindu village in the Kulu valley of the Himalayas whose local god is a reincarnation of him.




Go home

Dec 23rd 1999

From The Economist print edition

1639

IT WAS in the castle town of Shimabara east of Nagasaki, with smouldering Mount Unzen in the background and the pine-covered hills of Kumamoto across the bay, that some 20,000 Christian peasants rose up against the Tokugawa military dictatorship in 1637. Even with vastly superior forces, it took the shogunate months of bitter fighting to put them down. But by 1638 thousands of the peasants and their samurai mercenaries had been slaughtered. Though many more had gone underground, where they and their descendants practised their faith in secret for the next 200 years, Japanese throughout the country were forced to register at local Buddhist temples and barred from alien faiths. The Catholic church today recognises 3,125 Japanese martyrs from the Tokugawa era.

The defeat of the Shimabara rebellion reversed a century of Christian advance in Japan. Francis Xavier, a Jesuit missionary, had arrived in 1549, and counted Japan as one of his greatest successes. By 1615, more than 500,000 of its 18m people had been converted by Xavier and his Portuguese followers.

From the start, the Tokugawa shoguns—from 1603 Ieyasu Tokugawa, then his son Hidetada, then from 1632 a grandson, Iemitsu—had viewed the Christians, with their religious intolerance and allegiance to a foreign pope, as a subversive force that must be contained. That became all the more urgent once local war lords, like the great Date in northern Japan, converted to Christianity. Had not the Tokugawa leadership in Edo (Tokyo) systematically persecuted the Christians and then all-but stamped their religion out after Shimabara, Japan might today look for its theology to Rome (and perhaps in its economy be akin to Brazil?).

The Shimabara uprising also gave the shogunate the last excuse it needed to purge the country of foreigners completely, and to tighten even further its own stranglehold on foreign trade. The shoguns knew, from the accounts of visitors from Goa, Malacca and Macau, that after the European traders came the missionaries—and after or with these the soldiers.

In the early 1600s, Ieyasu's political reunification of Japan was still a fragile thing. His brilliant predecessor, Hideyoshi Toyotomi, had encouraged a profitable trade with the Europeans. Ieyasu, favourable at first, soon came to deem the risk of subjugation by foreigners, with their formidable ships and weaponry, too high a price to pay for the wealth it brought his exchequer.

So the squeeze began. The English surrendered their trading contracts in 1623, mainly because the Tokugawa restrictions made the business unprofitable. The next year the Spanish were forced to leave, for aiding underground missionaries. Then in 1639 the Portuguese, long associated with the Jesuits, were expelled; and their envoys were executed when they turned up again hopefully from Macau a year later. Only a small enclave of Dutch traders was allowed to remain, thanks to their non-proselytising Protestantism, along with visiting Chinese—all confined to a small island in Nagasaki bay. Meanwhile, the construction of ocean-going ships was banned. Japan was cut off.

Its centuries of isolation, from 1639 to 1853, were not thrown away. The Tokugawa era (1603-1868) put an end to centuries of warfare, ushering in a longer period of peace and stability than most nations have ever enjoyed. With virtually no foreign trade, the state was financed entirely from agricultural taxes. That meant misery for millions of ordinary Japanese. But because Ieyasu's military machine was no longer needed to

subjugate warring clans and keep the foreigners in check, the army was allowed to dwindle and its costs with it. And instead of being sword-wielding warriors, the educated samurai officers were transformed into pen-pushers for the sprawling bureaucracy needed by the highly centralised administration that Ieyasu had put in place (and which remains largely intact to this day).

Such a concentration of power engendered prolific patronage. Much of the Japanese high culture and creative wealth that we know today, from wood-block prints to kabuki theatre, blossomed during this era of seclusion. And by turning inward upon their own thoughts, the Japanese were free to develop an enduring notion of their own culture and identity. It is this national heritage from the relatively recent Tokugawa era—not the inheritance from some mythical Yamato two millennia ago, as nationalists like to think—that endows today’s Japanese with traits, tastes and talents that mark them out from their Asian neighbours.

But in technological, political and social developments, the Japanese paid a heavy price for their centuries of self-imposed isolation. They were abreast of Europe in such fields—even ahead in some—until the end of the 16th century. But they missed out on the intellectual tempest that later struck the West, bringing it the industrial revolution and such notions as individual rights and social justice. Japan has paid dearly ever since, as it struggled to catch up with western ways of thinking. Even now, this is one reason why it still lacks the confidence to make a moral, intellectual and political contribution to world affairs to match its economic one.




Mission

Dec 23rd 1999

From The Economist print edition

1799

EUROPE'S—and later America's—export of Christianity found few takers in Asia. In India, it took real root only in the long-Portuguese enclave of Goa (where St Francis Xavier lies embalmed, minus a toe bitten from the corpse by an over-zealous devotee). Later British rulers saw missionaries as an irritant; Hindus and Muslims largely ignored them. The Catholic church did better in French Indochina; with sundry Protestant sects, in China; and, till it was crushed there, in Japan. In Indonesia, both Portuguese Catholics and Dutch Protestant clergy left enough converts to figure in ethnic tensions today.

The big exception was the Philippines. The Spanish ruled there for 330 years, and nowhere in their empire did the church, well into the 19th century, enjoy more power. Though its friars in part provoked the independence movement of the 1890s, they left a largely Catholic nation today.

A worthier exception lay in the South Pacific islands and New Zealand.

The societies of religious persons who have, with so much piety and fervour, undertaken to propagate Christianity in the islands of the Southern Ocean, must be greatly pleased with the success of their first great effort. They have undertaken the generous task with the spirit of the purest benevolence, and at a most seasonable period, when they may happily correct the mischiefs which the previous visits of European navigators inflicted upon these remote people. The missionaries found in these luxurious islands all the temptations which the former navigators had so richly described; but their piety triumphed over every seduction, and their narrative acquires additional interest from the candid manner in which they state the amorous perils that they underwent.

So wrote the *Hampshire Chronicle* from that south-coast English county, when the British missionaries arrived back there in 1799. And, for once, Europe's version of its mission abroad was roughly true.




Millennium issue: The decline of empire

Gandhi, salt and freedom

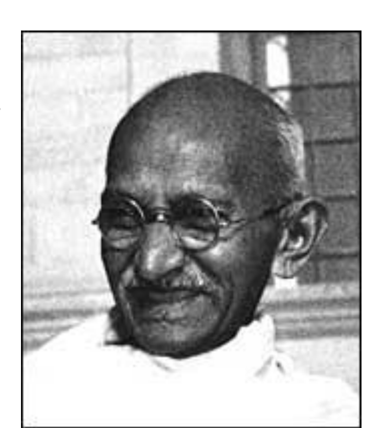
Dec 23rd 1999

From The Economist print edition

1930

ON MARCH 12th 1930 Mohandas Karamchand Gandhi set off with 78 disciples from his ashram in western India on a 350-kilometre trek to the coast. Twenty-five days later he stepped into a hollow, scooped up a handful of mud and salt, and announced to a throng: "With this salt I am shaking the foundations of the [British] empire."

Was he? Gandhi's symbolic flouting of the tax on salt, "the only condiment of the poor", did not end British rule; that took another 17 years and a world war. Though seen by thousands, and detailed to millions by the media (three Bombay film teams were on hand), the "salt march" appealed to the middle class more than to the poor, and barely stirred the Muslim minority, a blow to Gandhi's ideal of Indian unity.



Marching for self-rule and self-sufficiency

Yet, more than any other event, the salt march, exemplifying his tactic of non-violence, gave India's struggle for liberation its Gandhian stamp. His idea was to expose injustice, and shame the unjust into ending it, by shifting the perils of resistance on to the victim; his hope was to ennoble both.

The worthiness of the liberated was as precious to him as liberation. In a speech near the end of the march, he said:

I observed that you had provided for the night journey a heavy kerosene burner mounted on a stool, which a poor labourer carried on his head. This was a humiliating sight. This man was being goaded to walk fast. I could not bear the sight. I put on speed. But it was no use. The man was made to run after me. The humiliation was complete. If the weight had to be carried, I should have loved to see someone among ourselves carrying it...

—as he might usefully have said sooner—

...We would soon dispense with both the stool and the burner. If we do not quickly mend our ways, there is no [self-rule].

Town-bought milk and vegetables and incandescent lamps also aroused Gandhi's indignation. An Indian journalist who was there recorded the result:

As soon as he started his speech, his inner anguish started flowing. He asked how, when millions were not able to feed themselves even once in a day, we [truth-warriors] could indulge in such excesses. Lakhs [hundreds of thousands] of huts in lakhs of villages were drowned in darkness, because no rupees could be found for even a small oil lamp. How could we burn petromax lamps? His words pierced our hearts. One by one, the lamps were extinguished. The meeting was in darkness, except for a small lantern near Gandhi.

India never fully shared Gandhi's dream of a small-scale, self-sufficient economy, its *swadeshi* (own-country) garments made of hand-spun yarn hand-woven on home looms. Soon after independence in 1947, it was building giant, state-owned steelworks. But the Mahatma (great soul), murdered in 1948 by a Hindu fanatic, remains revered.

The scramble for Africa

Dec 23rd 1999

From The Economist print edition

The Europeans were slow to seize black Africa, ruthless in doing so, harsh when they had done it—but by no means doers only of harm

OF ALL the targets of European empire-builders, Africa was nearest; and "black Africa" among the least advanced. Yet, save for its far south, it was the last to be grabbed. Its coast had been known to Europeans for centuries and was dotted with their trading posts. But until around 1860 the interior was protected. Fevers killed off intruding white men, roads were few and cataracts blocked access by river.

1884

Then, setting off from their enclaves along the shores, European explorers began to walk old Arab trade routes. They searched for the truth of ancient stories about the dark continent and the sources of its mighty rivers. By 1862 they had reached the source of the Nile. A little later, they traced the route of the Niger. They confirmed the reality of Africa's fabled riches—ivory, gold, diamonds, emeralds, copper. Entrepreneurs also saw that, instead of buying crops like cotton or palm oil from its villagers, they could set up plantations and use cheap local labour to work them. Africa was becoming too valuable to be left to the Africans. Besides these were violent, savage and backward, in need of Christianity and civilisation, were they not?

Yet, ripe for takeover as Africa was, the European grab for it was neither inevitable nor consistent. Britain at first opposed a carve-up, but ended with the richest parts: today's South Africa, Ghana and Nigeria. Belgium's King Leopold II was one of Europe's least powerful rulers. But once he had carved out the Congo basin as a personal fief, other countries were quick to stake claims. Otto von Bismarck, chancellor of the strong new Germany, put in a bid for huge chunks of East and West Africa.

Europeans, quick to fight each other at home, were loth to do so for slices of a continent that they barely knew. Besides, it would set a bad example to the natives. So in 1884 the powers met in Berlin to share Africa out. In some areas, ignorant of people and geography alike, they made frontiers simply by drawing straight lines on the map.

The Africa they seized was technologically in the iron age, and politically divided into several thousand units, some based on language and culture, others on conquest, paying tribute to their conquerors. Much of the continent was in turmoil, as slaving gangs sent out by some of its own rulers spread war and sent communities fleeing.

Not all was oppression, nor plunder

Some Africans resisted the takeover, but the Europeans, no slouches at savage violence, most often swept their spear-wielding armies aside with the Maxim gun and repeater rifle, and brutally crushed local resistance. Much of Africa gave in without a fight, its kings signing away their sovereignty with a thumb-print. Many allied with the intruders, maybe believing that these would not stay long and would give help against some local rival. Some tried to play one set of Europeans off against another. Others were overawed by technology: the kingdoms of northern Nigeria surrendered to forces, led by a handful of white men, far smaller than their own. By 1914 Europeans ruled all of Africa, bar Liberia, the state founded by America for its ex-slaves, and Abyssinia (Ethiopia), an ancient kingdom which had fought off the Italians in 1896.

Posing as parents to Africans, Europeans counted them, taxed them and ordered their communities into tribes—or, where true tribes did not exist, invented them. Meanwhile, the best land was taken for plantations, and the minerals dug out and shipped off to be processed in Europe (a division of labour—and, inversely, of profits—which, except in South Africa, largely continues today). The storehouse was steadily exploited, but Africans saw little of its wealth.

Yet not all was oppression, nor plunder. King Leopold's arm-choppers were no improvement on the past; Christian missionaries mostly were. Europeans brought schools and hospitals; and order, and the start of modern administration, on which independent states would later be built.

Not late enough, thought many colonial administrators. The European occupation of black Africa was short-lived—barely a generation in some areas. After the second world war (in which many Africans died fighting for the Allies), America wanted an end to European imperialism, and African leaders, often socialist and aided by the Soviet Union, wanted self-rule. In Algeria, Kenya and Rhodesia, white settlers tried to keep power

by force, but in time lost support from “home”. White South Africans—far more numerous and longer in place—held out into the 1990s, but, facing unrest and outside pressure, had to give up.

It is too soon to draw up a balance-sheet of colonialism. Perhaps the Africans’ worst loss was not of land or power but self-respect, as the newcomers taught them that their ways, cultures and gods were inferior and should be abandoned. The alien religion put in their place often caught on; but the Europeans kept their version of politics, which arguably was indeed superior, for use at home, merely chucking Africa a few tattered pretences at it as they lowered the flag. Africa was left both psychologically and politically impoverished. Much of it still is so.

Perhaps the Africans’ worst loss was not of land or power but self-respect

The result today is a continent of states stranded between its old ways and modernity. African rulers grabbed the European-style institutions bequeathed to them, but nearly everywhere ran them into the ground, without creating new ones based on African traditions and values. Whose fault was it? In 1998, on the 100th anniversary of the battle of Omdurman, the British ambassador to Sudan was asked if he planned to apologise to his hosts for that butchery of their Mahdist forefathers resisting invasion. “Why not?” he said, “as long as we also apologise for the roads, hospitals, schools and university; indeed for creating a country called Sudan.”



PRINT EDITION
INTERNATIONAL

Millennium issue

Enter the crusaders

Dec 23rd 1999

From The Economist print edition

THE crusaders are besieging Caesarea. Two Muslim emissaries have a query:



Why do you tell your people to invade our land and kill us, when your religion says no one must kill anyone made in the image of your God?

The patriarch tells them:

Yes, but this town is not yours. It’s St Peter’s, whom your fathers chased away. We want to get back his land, not take your property. As to killing, whoever fights to destroy God’s law deserves that. Give up the land, and you can go unharmed with your goods. If not, the sword of the Lord will kill you.

The crusades have left a deep mark on the Middle East. This was the first, promoted by Pope Urban II in 1095, as recorded 50 years later by a Genoese crusader. Seven more had followed by 1270. Most achieved little; number four stuck to sacking Byzantine-Christian Constantinople. Yet pious Europeans were much impressed by them, especially by this first one. European accounts of the capture of Jerusalem in 1099 show why the Muslim impression is different:

Our men took many prisoners in the temple [the al-Aqsa mosque], men and women, killing some and saving some alive... They rushed through the city, seizing gold and silver, horses and mules, goods of all sorts. Then they went rejoicing and weeping for gladness to worship at the sepulchre of our Saviour.

Sic. Next day, there were still many Muslims left who had taken refuge on the roof of the mosque. A crusader leader had promised them protection. He meant it. His followers had other ideas:

They climbed up to attack the pagans, men and women, cutting off their heads with swords. Some Muslims jumped headlong from the roof.

As Muslims saw it, a swarm of Frankish savages had rushed in, unprovoked, upon them. That is nearly all true, but not the whole truth. Muslims too might kill all prisoners taken in battle: an Arab chronicler of this crusade records such a case in 1097. They too killed, or enslaved, the people of captured towns. But they did offer an escape route, instant conversion to the faith, as Christians did only later.

The half-truth is “unprovoked”. For what’s missing is that Europe for centuries till about 1000 was under Arab attack, often just as savage. That hardly excuses crusaders in 1099, but it helps to explain them. And Christian zeal met equal Muslim zeal: the winner of that battle in 1097 was, as his chronicler says, “fulfilling the obligations of *jihad*”, not just beating off invaders. Centuries of Turkish wars in Europe, and then French and British wars in Arab lands were yet to come. Both sides, not just one, might fairly apologise.

Yet that is not the lesson the Muslim world learnt. The crusades play their part in its lively distrust of the West today. They are not just ancient history.





Millennium issue: The Turkish empire

Goodbye to the Mamluks

Dec 23rd 1999

From The Economist print edition

1516

IN AUGUST 1516, on the plain of Marj Dabik in northern Syria, an Ottoman army smashed the forces of the Mamluk sultan of Cairo. The Turkish victory abruptly ended Cairo's 500-year domination of the central lands of Islam. For 400 years, half the Mediterranean and most of the Arab world would henceforth be ruled from Constantinople.

The event stunned contemporaries. Since taking power in Cairo in the 13th century, the Mamluks—a samurai-like regime of mercenary slaves turned masters—had been the mightiest force in the Middle East. It was they who chased the crusaders out of Palestine, they whose superb cavalry fought off Genghis Khan and his Mongol army in 1260.

A later Mongol onslaught, led by Tamerlane, who seized Damascus and then, in 1401, sacked Baghdad, had left Cairo the greatest city in Islam. The Mamluk empire stretched from Alexandria to Aleppo, and far to the south-east beyond Mecca. It monopolised the global spice trade, driving Portuguese venturers around the Cape of Good Hope, and Spanish fleets to the Americas, in search of alternative sources.

The shock was not just that this mighty empire had been beaten. The scale of its defeat was appalling. The 75-year-old Mamluk sultan, Qansuh al-Ghuri, had marched to Syria in style. His magnificent train included 50 camel-loads of gold, and 40 huge illuminated Korans. Besides the chiefs of all Cairo's courts and guilds and dervish orders, he had brought along the caliph, Mutawakkil, latest of the Abbasid family, whose lineage as titular leader of Islam extended back 800 years. For the past 250 of them, Mamluk sultans had used these powerless caliphs as props to legitimise their own rule.

The battle was over in 20 minutes. As it began, the commander of the Mamluk left flank pulled his troops out. This treachery (it earned him an Ottoman governorship) assured the rout of the Mamluks. The sultan was killed, the caliph shipped to Constantinople as a prisoner. The Abbasid line had ended, and Ottoman rulers would now claim its perquisites. The Ottoman sultan, Selim the Grim, on entering Aleppo insultingly dispatched a lame clerk leaning on a cane to take the citadel, where al-Ghuri had parked his camel-loads of treasure.

Within a year the rest of the Mamluk realm had fallen. Within 20 the Ottoman Turks ruled almost all the Arab world, except for distant Morocco and Oman. One battle had transformed an essentially European power into a great Islamic-Mediterranean empire. Selim's successor, Suleiman the Magnificent, was now the richest potentate on earth, Servant of the Holy Places and Commander of the Faithful.

With 480 years of hindsight, the fall of the Mamluks looks less surprising than at the time. The forces at Marj Dabik were not balanced. The 20,000 Mamluks relied on tactics and equipment perfected in the 13th century. The highly trained, horse-mounted archers at the core of their army were no match for Ottoman foot-soldiers wielding new-fangled arquebuses, nor for the Turks' deadly light artillery. The Ottomans' logistics, with separate corps for transport, engineering, food supply and surgery, enabled them to keep 60,000 men in the field.

The Ottomans also represented a new kind of thinking. The regimes they replaced were feudal and venal. In the Mamluk realm, non-Muslims had been tolerated, but only just. The Ottomans had a different vision. Like the

British in 19th-century India, they respected local grandees. They also installed a cohesive system of taxes and administration. Customs tariffs were kept low, and foreign merchants welcomed. Enjoying nearly autonomous status, the empire's large religious minorities prospered. For all its later decay, in its early centuries the Ottoman empire was an outstanding success.

Yet the very success of its system sowed the seeds of future trouble. As a loose collection of sanjaks, beyliks, bishoprics and rabbinates, tied to Constantinople with the flimsiest of threads, the peoples of regions like the Balkans and the Middle East got along fairly well. But schisms would eventually arise. Ethnic and religious nationalism, those gloomy fashions of the 20th century, were to make the Ottoman mix explosive.



PRINT EDITION INTERNATIONAL

Millennium issue

To Mecca

Dec 23rd 1999

From The Economist print edition

ALL through the millennium, Muslims have made the Haj pilgrimage. Abu al-Husayn ibn Jubayr went to Mecca from Spain in 1184. Much that he recorded was as it is today:



Pilgrims were arriving from various countries, so many that only God could count them. Mecca lies in a valley a bowshot wide. It expands miraculously to hold them all—like the womb for the fetus, as scholars say.

But not everything. To Ibn Jubayr, living 600 years before Malthus, the plain of Arafat looked "wide enough to hold all mankind on Resurrection Day".

The loud cries of *Allahu akbar*, as

the people stood contrite and in tears during the prayers, begging for God's mercy,

would be familiar today. But then

the emir of Iraq arrived, with foreign emirs and noble ladies in great numbers. His camp was surrounded by a linen screen, like a wall with high doors, painted with black shields. The tents inside were variegated like flowers in a garden. It is like a city that moves when the emir moves, and settles where he settles.

At Muzdalifa, the next point of prayer on the way back to Mecca,

the sacred area was lit by candle lamps, the mosque too, so that it looked as if all the stars were twinkling on it. The Khorasanis [from Iran] and some Iraqis bring great numbers of candles. The mosque at Mecca looked the same while they were there, because whenever they went inside, each one took in a candle. We saw one huge candle, like a cypress, which they set before their imam.

Nearer Mecca, Ibn Jubayr saw a riot between some of its "black" inhabitants and the Iraqis. But then, back in the holy city, the cloth to cover the Kaaba, the cube-shaped shrine at the centre of the mosque compound,

was brought in from the Iraqi emir's camp, carried by four camels. The new judge of the city walked before it, in black robes, led by banners and followed by rolling drums. It is a rich green, with a broad red band around its upper part. Once the Kaaba was covered, the hem was tucked up, to protect it from the pilgrims, who pull at the cloth.

Ibn Jubayr had found the judge a "dull and stupid" preacher. Not so a Khorasani who preached one evening

in fluent Arabic and Persian. Next evening it was a sheikh with white moustaches who moved his listeners to rapture. They hurled questions at him like arrows, drawing long replies that left us awed. It was as if God inspired his words. Some people tried to confuse the preachers, but they replied in a flash. Superiority is in Allah's hands.




Millennium issue: Slavery

Guilty parties

Dec 23rd 1999

From The Economist print edition

IN HIS memoirs, published in England in 1789, Olaudah Equiano told how, as a child in what is now Nigeria, he was stolen into slavery:

1789

One day, when all our people were gone out to their works as usual, and only I and my dear sister were left to mind the house, two men and a woman got over our walls, seized us and, without giving us time to cry out, stopped our mouths, and ran off with us into the wood. Here they tied our hands and continued to carry us as far as they could.

Equiano, separated from his sister, was sold to an African chief, who sold him on to a trader, who took him to the coast and sold him in turn to an English slave ship. When he was taken aboard, and saw its wild, long-haired, red-faced crew, and a large cauldron on the deck, he fainted, thinking these savages were about to eat him. No such luck: he was on the way to the West Indies.

Between the mid-15th century and the late 19th, 12m Africans, about a third of them women, made that voyage. Whites had found a new world, and needed blacks to exploit it. Seized—by other blacks, not whites—force-marched to the coast carrying ivory or copper, then inspected like animals, sold and crammed into ships, they made the 30-40-day voyage chained and forced to lie in their own ordure and vomit. Then taken out, inspected again and resold, they were branded and forced to dig in mines, clear land, plant and harvest sugar. Much of this while Europe enjoyed the Enlightenment.

British, French, Spanish and Portuguese were all guilty. Yet not alone. In Africa, slavery was accepted as the norm in most societies. Before Europeans arrived, and long after, millions of Africans were marched north across the desert by Arab traders. Most had been taken in war. The guns given in exchange helped wars to multiply and grow larger. Prisoners who might earlier have been absorbed into the victor's army or workforce, or killed, were now fed to European and American ships seeking human cargo, from Gambia round to Mozambique. Other Africans were sold as slaves because they owed a debt; some even by their own families. Some, like Equiano, were simply grabbed; though only in the early years by Europeans, because that upset relations with the African coastal kings, who wanted to keep control of the trade.

Though brutally mistreated, slaves were not cheap. In 1753 a slave on the Gold Coast (now Ghana) cost £16 (say, £1,000 or $1,650 in today's money); in the West Indies he would fetch £35. In the 19th century that margin widened. The price was mostly paid in goods, cloth, liquor, iron bars, guns and swords. The slave ships' owners and those of sugar and cotton estates made fortunes. They invested in land and grand houses, some Britons in the industrial revolution. But Africa's slaving kings and entrepreneurs seem to have squandered their profits. They left no great political or commercial empires.

Though a few African kings and European traders refused to join in the slave trade, Europe took 300 years to reject it. Medieval Christianity and Islam both forbade the enslavement of their own adherents, but saw nothing against enslaving unbelievers; indeed thought it might bring them salvation. Christians also saw black people as descendants of Ham, and therefore eternally cursed. Later, the slavers, sea captains and ship-owners alike, believed Africans would be better off as slaves in America than in Africa; in Brazil rebellious slaves could be sent

back as a punishment. Some Africans, like young Equiano, thought the Europeans were cannibals who bought people to eat them.

Gradually in the 18th century an anti-slavery lobby built up in Europe, notably in Britain, the superpower of the seas. In 1772 Lord Mansfield, a judge, ruled that a runaway slave there could not be forced back by his master to the West Indies. The ruling was interpreted (questionably, but this was the effect) as confirming that there could be no slavery in Britain. In America, it created fears that Britain might try to abolish slavery in its colonies. The desire to maintain slavery was not the least motive for the American war of independence, in which some blacks fought on the British side. In 1807 Britain banned the slave trade, and began using its navy to stop it. But slavery itself did not end in the British Caribbean until 1838, in the United States (in practice) 1865, in Spanish-owned Cuba 1886, in Brazil 1888. The memory of slavery and its lasting social effects sour race relations in Europe and America to this day.

In Africa slavery lingers on in pockets; it was officially abolished in Mauritania only in 1980. Yet, except in areas like that, bordering the Sahara, where blacks were traditionally enslaved by lighter-skinned desert peoples, slavery and the slave trade left no social stratification, and they figure little in popular consciousness today.



PRINT EDITION INTERNATIONAL

Millennium issue: Zulu power

From Shaka to Inkatha

Dec 23rd 1999

From The Economist print edition

THE young Scot, Charles Maclean, heading north across the Tugela river in 1825, could scarcely believe his eyes.

1825

The heaps of human skulls and bones blanching the plains were sad monuments of the fearful conflicts that had annihilated whole tribes.

Mile after mile of territory lay bare, kraals battered and razed, emptied of all human life. Those who had survived the invasion had fled in terror and scattered. This was the *mfecane*, the crushing, an explosion of savage wars and migrations which gave rise to the Zulu nation. Much of it was provoked by a young warrior named Shaka kaSenzangakhona.

Born in about 1787, Shaka had his own brother killed so he could seize the Zulu chieftainship. At the time, the broad swathe of land from Delagoa Bay in today's Mozambique, south-west to the Drakensberg, in South Africa, was a patchwork of villages and clans. Keen to grab fresh pastures for grazing, and new cattle to feed the fledgling armies of their chiefs, these clans began to clash.



Demonstrating for Inkatha, 1996

The Zulus were not the only aggressors. Much of the *mfecane* of the interior was carried out by rivals. But Shaka and his disciplined regiments were the ultimate victors, crushing such adversaries as the mighty Ndwandwe in bloody battles during which Shaka perfected his tactics. Most famous of these was the "bull's horn", whereby a rival army was enclosed on both flanks by an advancing wall of Zulu warriors, armed with shields and the stabbing *assegais*, short spears, that Shaka had invented.

Shaka is celebrated in Zulu folklore as the grandfather of the nation that he forged out of conquered tribes and clans. Others see him as a ruthless tyrant. One story suggests that he ordered a pregnant woman slit open to see whether the baby lay in her womb as in that of a cow. Legend has it that, when Shaka's mother died, he killed those who did not cry loud enough.

By 1828, when he in turn was killed by his own brothers, Shaka had ruled as king of the Zulus for 12 years. During the *mfecane*, some 2m people had been slaughtered. A multitude of tiny clans had been consolidated into a few stronger nations: the Matabele, the Swazi, the Sotho and, above all, the quarter-million-strong Zulu people.

Fratricide was the making of the Zulu nation, and its undoing. Infighting tore the Zulus apart 150 years later, when descendants of Shaka in white-ruled South Africa dipped into the potent mythology surrounding him to found a Zulu cultural movement, Inkatha. Secretly armed by apartheid security men, this unleashed terror and blood in 20 years of political battle in Zululand against the multi-ethnic African National Congress.





PRINT EDITION
INTERNATIONAL

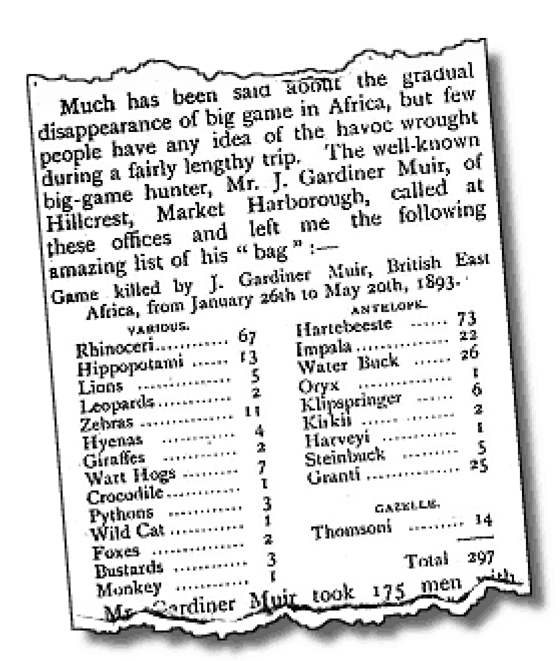
Millennium issue

The slaughter

Dec 23rd 1999

From The Economist print edition

NORTH AMERICA had its bears and bison, foxes and beavers, Australia its kangaroos and dingos, Asia its wild horses and antelopes, lions and monkeys; but only in Africa were the plains and forests roved throughout the millennium by countless species of beasts in innumerable herds. Even now, that is true in game parks there. But the herds have dwindled, as men have multiplied. Not only for that reason, though, nor is worry as recent as wildlife-lovers may suppose. Witness London's middle-brow *Strand Magazine* in 1896:



Much has been said about the gradual disappearance of big game in Africa, but few people have any idea of the havoc wrought during a fairly lengthy trip. The well-known big-game hunter, Mr. J. Gardiner Muir, of Hillcrest, Market Harborough, called at these offices and left me the following amazing list of his "bag":—

Game killed by J. Gardiner Muir, British East Africa, from January 26th to May 20th, 1893.

VARIOUS.	
Rhinoceri	67
Hippopotami	13
Lions	5
Leopards	2
Zebras	11
Hyenas	4
Giraffes	2
Wart Hogs	7
Crocodile	1
Pythons	3
Wild Cat	1
Foxes	2
Bustards	3
Monkey	1

ANTELOPE.	
Hartebeeste	73
Impala	22
Water Buck	26
Oryx	1
Klipspringer	6
Kirkii	2
Harveyi	1
Steinbuck	5
Granti	25
GAZELLE.	
Thomsoni	14
Total	297

Mr. Gardiner Muir took 175 men with

Millennium issue: Oil and politics

Gushers of weakness

Dec 23rd 1999

From The Economist print edition

IRAQIS centuries ago were using oil to make roads. It has driven much of the recent history, and money, of the Middle East, which holds two-thirds of the world's known reserves and pumps a third of its output. Yet less than 100 years ago, oilmen doubted if the region would be of much commercial use.

1901

Rather, they did until May 28th 1901, when William D'Arcy, an Englishman rich from gold-mining in Australia, won a 60-year concession to prospect in most of Persia. In 1908 he struck big at Masjid-e-Suleiman, in the south. By 1913 a 215-kilometre (135-mile) pipeline joined his field to a refinery on Abadan Island. Oil began to flow, and it was clear that fortunes would be made.

By outsiders, that is. Governments in the region were weak and poor. Only foreigners had the skills or finances to pump and ship, or refine, the oil. The British dominated at first, after their government signed a contract with D'Arcy's company in 1914 to supply the Royal Navy, now switching from coal, and readying itself, under a gung-ho navy minister, Winston Churchill, for war with Germany. The British government also invested £2m in the company, which in time became state-controlled, under a new and later famous name: British Petroleum.

Once D'Arcy had shown that Persia was awash with oil, the Middle East oil rush began. First French companies, then American ones (in 1928, backed by heavy pressure from Washington to get them in) joined it. Oil was struck in Iraq in 1927, in Bahrain in 1932, in Saudi Arabia in 1935, in Kuwait in 1938.

Even so, in 1938 the region supplied only 5% of world oil output. And Middle East governments were almost as marginal in the region's oil industry. They owned no part of it, and had no say in management. They collected royalties and that was all: about 6 cents a barrel, on oil which during the 1914-18 war had reached about $3.50.

Only in the 1950s did the 50-50 split of profits between government and company become the norm; and Iran's attempt to nationalise its oil in 1951 was sabotaged by British and American subversion of its prime minister. Not till 1973, when Arab states concertedly rammed up the oil price during an Israeli-Egyptian war, could the Middle East claim to be, more or less, master of its own underground resources. Even then, it was to discover that no commodity cartel can very long be master of the market.




Millennium issue: The Arab world and Europe

Suez

Dec 23rd 1999

From The Economist print edition

1956

A SHOCK struck the western world on July 26th 1956: Gamal Abdul Nasser, president of Egypt, had nationalised the Suez Canal. These Gyppos neither should nor could run the vital waterway on their own, cried the outraged. Britain and France, clinging by post-war fingernails to the shreds of Middle Eastern overlordship, spluttered that Nasser must not be allowed to get away with it; before long, their governments were comparing him to Mussolini, even Hitler.

Nasser acted after the United States, for political reasons, suddenly withdrew a promise of aid to build a high dam at Aswan, on the Nile. It was an obvious way to hit back at a perfidious West; canal tolls should pay for the dam, he said. Besides, why should anyone complain? There would be compensation, and the company's concession was near its end anyway. But of course the West complained. It still saw the Middle East as its fief. To ensure the canal's safe and open operation—and it was indeed vital to western oil supplies at the time—it must be internationalised. Britain and France went further: if Nasser did not agree, he must be made to—and if that meant overthrowing him, fine.

The Egyptians in fact showed that they could run the canal perfectly well (and still do, though the supertankers whose development its seizure helped to inspire have lessened its importance). To Britain and France that was not the point. They carried on planning for war; and got a very ready Israel, secretly, to join in.

The three conspirators' motives varied. With "Nasser's hand on our windpipe", the British feared both for their oil and their links to imperial outposts farther east. France, fighting a long war to retain its Algerian colony, wanted to stop Egyptian help for the rebels. To Israel, Egypt was its most dangerous enemy.

The plot was crude. The canal had been dug in the 19th century with French and Egyptian effort and money. But the British, de facto rulers of Egypt from their bombardment of Alexandria in 1882 until its 1952 revolution, had long treated the strip each side of the canal as their own. Agreed, then: Israel would find a pretext to attack Egypt, the other two would intervene to "separate the combatants" and safeguard the canal—and would take the canal zone back again.

Militarily, the operation went more or less to plan, but slowly—slowly enough to let it become a political fiasco. Growls from the Soviet Union persuaded America's President Dwight Eisenhower that his allies were playing too risky a game to be allowed to go on. Israel was told to withdraw its troops, or forfeit American aid. Britain was left without a helping hand as its modest currency reserves flooded out. The venture, which had split British opinion, collapsed.

With it, European influence in the Middle East drained away. American and Russian influence grew: from then on, the region figured large in cold-war politics. Boosted by the attack, Nasser became both leader and symbol of a heady new pan-Arab nationalism, socialist (in theory) and self-confident. In Iraq, a pro-British regime was toppled in 1958. Algeria, Europe's last sizeable Arab colony, won independence in 1962.

Yet the idea of pan-Arab nationalism, dominant for a time, was short-lived. After several failed attempts at unity, Arab leaders stopped talking about it. Their humiliation in 1967 by Israel, long since reinstated in American favour, ended the bombast. Authoritarianism flourished on, but socialism had few defenders. Nasser

kept power until his death in 1970, and remained a legend, but not an example. By the mid-1970s, an Egyptian president was seeking peace with Israel, good relations with America and free-ish enterprise at home. And a new force, Islamic fundamentalism, was round the corner.

Millennium issue

Soot, steam, supply and a hole in Pennsylvania

Dec 23rd 1999

From The Economist print edition



The modern economy was built on coal, and then oil. But they didn't spring out of the ground; they sprang out of demand

1700–??

FOR most of history, man's chief energy source—food apart—has been wood. And he had plenty of it. In 1000 most of Europe held many trees and few people. Such fuel as was needed was plentiful and cheap. But as a growing population and economic development led to extensive deforestation, by around 1700 England faced a fuel crisis, or thought it did. Much worry was expressed about the soaring cost of wood for heating and for the already booming iron industry; the price of charcoal, used in iron-smelting, doubled in real terms between 1630 and 1700. Yet, not for the last time in the history of such crises, demand produced supply. Entrepreneurs developed and marketed Britain's vast reserves of a fuel that lay ready for extraction under their feet, once the market made it worth extracting: coal.

Coal was to power Britain's industrial revolution, and, later, as steam-powered machinery spread, the first steps in its agricultural revolution too. Till very recently, that was true of every other country; it still is of China and India. Without coal, there would have been no revolution. Water power and a little wind power had been used for millennia, to raise water, to grind corn, to drive sawmills, and, quite extensively even before 1800, to spin and weave. But wood, water and wind could never have met anything near the new demand for energy. Today's oil-driven world and tomorrow's driven by who knows what owe their birth to coal. Yet equally, but for the revolution most of the coal would have stayed exactly where it lay (as much still does). There was no precedence; the two went hand-in-hand.

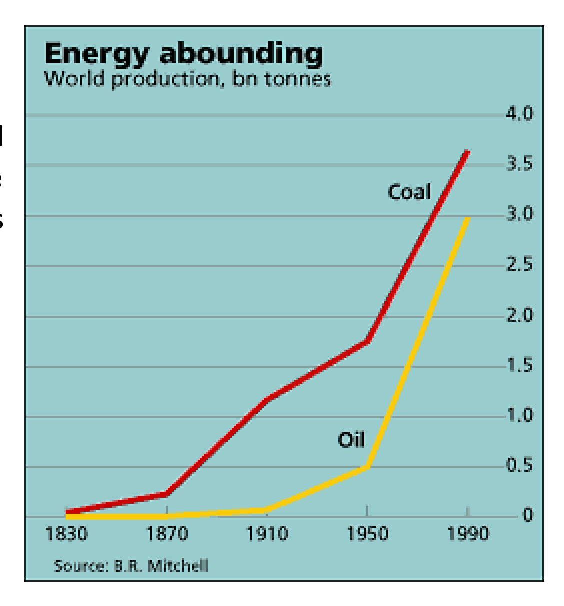
As often with such couples, however, those watching them began to fear, yet again, that one would outstrip the other. In the mid-19th century, the British began to suspect they would run out of coal. A noted economist, W.S. Jevons, crunched the numbers and reported in 1865 that Britain would exhaust its supplies by 1900. And, analysing the rudimentary data available, he added that oil could never make up the shortfall.

Wrong again, even about Britain's own coal. The shortage of that coincided with a global shortage of whale oil, which for centuries had been the lighting fuel of choice. These twin forces inspired countless entrepreneurs in America and Europe to seek out alternatives. Guess what they found.

Not that they were the first. In 3000BC asphalt was in use to caulk Sumerian boats, and to waterproof baths for the rulers of the Indus valley. By our second century, the Romans were burning crude oil as a fumigant against caterpillars. By the tenth century, Arabs had figured out how to distil it; the streets of Cairo were lit by the stuff. Marco Polo noted in 1272 as he passed by Baku, on the Caspian sea, that oil lamps were common. At the end of the 18th century, Britain's first envoy in Borneo, in South-East Asia, found a flourishing oil industry: some 500 hand-dug wells supplied light and heat for Bornean homes.

Why then did petroleum not emerge earlier as a serious energy source? The answer lies, yet again, in the interplay of population and technology. Oil oozing out of rocks or dug out by hand was usually enough to meet the modest needs of those who lived nearby. But Europe, where the early arrival of industrialisation sent energy demand soaring, had little oil. So pundits assumed oil would play no great role in the new economy.

They had not noticed the human ingenuity that incentives can draw forth. The many machines spawned by industrialisation, such as the power loom and printing press, required a better lubricant than animal fat. Demand for cheap, good lighting fuel was growing: by 1850, the new urban middle class was no longer content with candles, or lamps made from rags dipped in animal fat. But already the schools of whales were shrinking, and whale oil soaring in price. Inventors and financiers on both sides of the Atlantic set out to find the magic substance that would grease or light the world (not power it) and make them rich. This blunderbuss of innovation produced such products as camphene, derived from turpentine, an oil from trees; and, more usefully, the town gas, made from coal, that was widely used in Europe until around 1970.



In the end, though, one lucky group of American investors thought of looking for petroleum in western Pennsylvania. They knew the black stuff had long oozed out of rocks in the area, in small quantities. They wanted some better way to tap oil for the mass market. Months of failure exhausted their money. They wrote to their man on the spot to call a halt. Just before their letter arrived, he hit upon an ingenious idea: rather than dig for oil, why not drill for it?

Drilling was not a novel technology in itself: the Chinese had drilled for oil for centuries, and in America salt was extracted this way. But only on that lucky August day in 1859, in the heart of the Pennsylvania oil patch, did consumer demand, investment capital and technology coincide. The result was a new fuel: around 1m tonnes a year of it in the early 1870s, 60m as the first world war broke out in 1914, 350m as the second one ended in 1945 and ten times that figure today. And not just a fuel, but, indirectly, a technology: the internal combustion engine, without which mankind might have taken to the roads but never to the skies.





Millennium issue

The visible signal-box

Dec 23rd 1999

From The Economist print edition

THE industrial revolution was built on coal. But where would it have got without rail? *The Economist* in 1845 set out (too late) to milk the British railway mania with a weekly supplement, *The Railway Monitor*. Its first issue recorded that Britain by then had already seen 412 Railway Acts, for the building of 278 separate lines. By the end of 1844, 2,069 miles of track had been completed in Britain, 1,384 in Germany, 552 in France and 3,688 in America. The implications for society were huge. But our reflections were more mundane: if a dozen companies wanted to build a line from A to B, which was to win?

Our answer was less than pure Adam Smith:

Not only the most prudent but the only practicable plan will be to merge all their schemes into one.

Nor did *The Economist* deny a role to government. It recorded without comment a French law of 1842 committing the state to put up half the capital for new lines. As to rival routes, we positively commended the French system:

...there, as here, a dozen companies competing to make one line, but with this difference, that in France the plans and course of the line are fixed by the government, which submits to competition the terms on which it is taken by the companies, while here the competition exists at the earlier stage of determining what the line shall be.

Nay more, this paper commended the French practice whereby

to prevent ruinous competition as to the terms, we see all the companies amalgamating their interests and dividing the shares in certain proportions among the whole

—an idea that we recommended to Britain, where, we said cheerfully, it would

not only secure the earlier accommodation of railways where they are most required, but save an enormous expenditure, which will only be so much waste to the public.

So much for the invisible hand.

Millennium issue: International trade

The East India companies

Dec 23rd 1999

From The Economist print edition

TO JAN COEN, writing home in 1614 to his bosses in the Dutch East India Company, it was simple commercial fact:

1614

Trade in Asia must be maintained under the protection of our own weapons; and they have to be paid for from the profits of trade. We can't trade without war, nor make war without trade.

Within five years, "war" had become "land". Coen seized a small port called Jakarta, renamed it Batavia and fortified it. The idea was not new. Throughout the east, Asian traders had long, de facto, run the districts of foreign ports where they lived and did business. To self-government the Portuguese, whose "factories" by 1600 had stretched to Nagasaki, added guns. And then territory. Coen did the same, claiming 12,000 square kilometres which he (untruthfully) said went with the former Jakarta. The English East India Company, founded in 1600, two years before the Dutch one, would later do much the same in India.

To Asians, this is a simple, nasty tale of European imperialism. Yet it is also one of commerce. Coen, like the English company's Robert Clive 150 years on, was building a giant multinational. The Dutch in the early 1600s led the world in commerce. Amsterdam, trading to the Indies, through the Baltic and with the Americas, was a giant *entrepôt* for spices and sugar, tobacco, timber, cloth and other manufactures from across the globe; and, not by coincidence, a big financial centre too. The jewel in this crown was the Dutch East India Company. It soon forcibly evicted its English rival, and later the Portuguese, from South-East Asia, and was for a time the world's biggest trading enterprise, with ships plying not only to and from the East but (no less) throughout it.

The London company was to take its place, becoming on the way the biggest single business in Britain. In their practices, the two were much alike. Both proclaimed free trade, and practised monopoly wherever they could. These were the robber barons of their time, and, unlike Standard Oil, encouraged to be so by their governments. The Dutch had found that competition among their merchant-venturers to buy spices in the East was raising the price: so, hey presto, form a unified company, and grant it a monopoly east of the Cape of Good Hope. On the spot, it arm-twisted local rulers to grant it exclusive trading rights, though in practice it had a true monopoly in only one or two products, such as cloves and nutmegs.

Few questioned this policy, though one Dutch director in 1618 pointed out its result in the spice-growing Molucca islands: imported food cost so much that the locals were busy farming instead of picking cloves. Nor would they buy the overpriced textiles that the Dutch brought in from India.

The English company was a monopoly twice over: its members were mostly London merchants, to the rage of other English ports, which called for its charter to be revoked. Small at first, it grew as Europe's interest extended from spices to eastern textiles (so much so that the trade-rigging biter was bit: the English woollen industry in 1720 won a law forcing the company to re-export all its Bengal calicoes). From 1750 on, its (very) big earner was the monopoly of tea, from China. For this it paid in silver—the Chinese did not want manufactures—until, around 1775, it adopted a cheap, deadly substitute: opium, specially grown on its Indian estates.

To uphold their position in the East, both companies used force, against rivals and native peoples, when that paid; as it did—more easily for the Dutch, among the East Indian islands, than for the British in India. The odd qualm at home was brushed aside. Coen in 1621 massacred the inhabitants of one group of islands; he got a slap on the wrist. Was all this costly conquest really worth it? asked the company's Delft shareholders in 1644. Yes, Coen's successor told them firmly.

Dutch or British, the men on the spot were no less ready to pocket their employers' money, making up for low pay with embezzlement and trading on their own account.

Yet, for all their dubious economics and management, both companies were pioneering the skills and networks of modern global commerce. And the technology: just as the Dutch Baltic traders had pioneered the *fluyt*, the bulk carrier of 1600, the English East Indiaman set the standard for ocean-going vessels two centuries later.

Both companies were remarkably long-lived. The Dutch one declined, as the country's industry did, in 1750-1800, to be wound up on the last day of the 18th century. The English one lost its monopoly of British trade with India in 1813 and then with China. Yet it survived until after the Indian mutiny of 1857; indeed, on paper, until 1873.

No two companies (except maybe those of Henry Ford and Bill Gates?) have ever, on the way, had such socio-political effects, many of them bad. The Dutch one left behind a wide, often ill-run empire, and South African apartheid. The English one gave Britain its Indian empire, deindustrialised in the early 1800s by a flood of British textiles, but well-run later; the 1840-42 opium war with China; the English tea party—and, arguably (the company had just got a monopoly there), the one of 1773 in Boston too.

Millennium issue: The state in industry

Colbert's sewing machine

Dec 23rd 1999

From The Economist print edition

1665

ON A cold day in November 1665, Louis XIV did something unusual for a king renowned for warring and womanising. He visited a factory. But not any old factory. Les Gobelins, the Royal Manufacture of tapestries, on the edge of Paris, was the most ambitious attempt by his hyperactive finance minister, Jean-Baptiste Colbert, to use the state to promote the French economy. In 1663, Colbert had taken a handful of tapestry manufacturers; installed them in a single factory, state-owned and run; hired craftsmen from Italy and the Low Countries—and set an example to economic policymakers for 300 years to come.

His strategy rested on a conviction that international trade was a zero-sum game: the more a country imported—tapestries, lace or mirrors, say—the more real wealth it was losing. So bring in skills and technology, to enable French citizens to buy French-made goods and staunch the outflow of France's gold. How? The state must do it. This mercantilist-cum-statist instinct was not new. The king's ancestors, such as Louis XI, 200 years before and Henry IV, around 1600, had tried with varying success to stimulate domestic production, notably of luxury goods. But Colbert was the first European (the Chinese, as usual, had got there first) to champion state intervention in industry on a grand scale and to achieve worthwhile results.

These were delivered by a cadre of officials such as the painter Le Brun, whom Colbert picked to run the Gobelins, and who instituted a rigid regime. Employees had to work, in silence, from dawn to dusk, were fined and/or imprisoned if they left a workshop without written permission, and were sacked if found drunk on the job. What Louis XIV saw was, in effect, a company town: the workshops; staff housing; a canteen supplied by on-site gardens, orchards, a mill and a brewery; a hospital; a chapel; and a technical school for 60 apprentices.

"Colbertism" relied on carrots as well as sticks. To retain the best craftsmen, the Gobelins offered them privileges and bonuses: cash gifts when they got married and when a first child was born, even a dowry from the king for their daughters, to ensure a steady supply of future generations of craftsmen.

By the end of the decade, Colbertism was having the desired effect. In 1669, the Venetian ambassador wrote home sourly that

French merchandise is in demand on all coasts, which forces [people] to send their currency to France, to the obvious detriment of other markets and to the satisfaction of Colbert, who seeks only to despoil other nations so as to enrich France.

Yet Colbert was not entirely satisfied. Writing in 1671 to an official appointed to oversee state factories, he admitted his system's flaw. Their managers, he complained,

never apply themselves to surmount by their own efforts the difficulties they encounter in their business, as long as they hope to find easier paths "at the order of the king".

State enterprises, it seems, had already got used to state bail-outs.

This may partly explain why Colbert's experiment barely outlasted him, and why it was another couple of centuries before governments once again began meddling in industry on a substantial scale. In the 19th

century, both Tsarist Russia and Japan (for a time), after its reopening to the world, tried to promote industrialisation through state ownership. The idea really took off after the first world war; notably and naturally in Soviet Russia, but also in Italy, where economic turmoil led to Mussolini's creation in 1933 of the Istituto per la Ricostruzione Industriale, a giant state holding company that still exists today, though much shrunken.

Nationalisation took another leap forward after 1945: partly when, as in France, governments confiscated the assets of firms that had collaborated with the Nazis; more widely, as in Britain, under left-wing rule or pressure. The idea of the state as prime mover flourished in ex-colonial countries such as India, thanks to leaders educated to think that liberation, development and public ownership went hand in hand. Indeed, most of this century has seen a worldwide trend towards state involvement in industry and other sectors of the economy. Only since 1980 has privatisation begun to unravel the handiwork of latter-day Colberts.

Millennium issue: Antitrust

Standard ogre

Dec 23rd 1999

From The Economist print edition



Robber baron Rockefeller

THAT August day, John D. Rockefeller did his habitual nine holes in his lowest score ever, despite being interrupted with news of an antitrust judgment fining his company, Standard Oil, about a third of its $100m market value. The penalty was later thrown out. But a little under four years later, on May 15th 1911, Rockefeller, again out on the golf course, was told that the Supreme Court had found the firm guilty of antitrust violations, and ordered it to be broken up. "Buy Standard Oil," he advised his playing partner. A good tip: its pieces proved to be worth far more apart than together.

The break-up of Standard Oil into 34 companies, among them those that became Exxon, Amoco, Mobil and Chevron, marked the birth of strong antitrust policy, in the United States and beyond. The Sherman Antitrust Act dated from 1890, but had so far proved largely toothless against America's "robber barons" (Rockefeller, Andrew Carnegie, Cornelius Vanderbilt and the like). In the 1890s the law had forced Standard Oil to alter some of its worst practices, and to move many operations from Ohio to New Jersey; but this had little real impact on the oil giant. By 1900, it controlled over 90% of the refined oil in the United States. The Sherman act came of age with that victory over Standard Oil in 1911. Notable wins followed: against American Tobacco (also in 1911), Alcoa (1945) and AT&T (1982), before the challenge to Microsoft during the 1990s.

What gave the Sherman act the power to blow Standard Oil apart was an explosive mixture of economics and politics that has accompanied antitrust policy ever since. The law sounds decisive, making it illegal to "monopolise, or attempt to monopolise, any part of the trade or commerce" among American states or with foreign countries. Yet on how to apply that in practice, Sherman is vague, leaving it to the courts to decide. The same is true of antitrust law elsewhere. European Union law bars "abuse of a dominant position"; Britain forbids acts contrary to the "public interest". In each case, it is left to courts and policymakers to decide what action, if any, these words require.

Politics weighed more than economics in the Standard Oil case. The company might have escaped, as others with more political savvy, like US Steel, did, had it played its cards better. President Theodore Roosevelt had launched the antitrust suit; offering to support his re-election if he dropped it was not smart. Later moguls—ask Bill Gates—have paid a price for underestimating the politics of antitrust.

The economic case against Standard Oil was far from proven. Economists still argue whether its aggressive buying of rivals and cut-throat pricing accelerated or retarded the growth of the industry and the ready availability of cheap fuel. It was already being challenged by oil from Texas and Persia. Economic issues are often even trickier today: it is usually easy, with the aid of modern developments in economic theory, to make a plausible case both for and against any alleged monopoly. Little wonder that antitrust has become a lucrative job-creation scheme for economists, as each side hires an army of dismal scientists to prove its point.

Joseph Schumpeter's theory of "creative destruction", now back in vogue, suggests that, in some circumstances, monopoly may stimulate innovation and thus boost economic growth. His notion is that an

innovative firm that wins a monopoly then becomes complacent, and is displaced by a sharper rival, and so on. That, broadly, is what happened to IBM. Today Microsoft argues that its dominance in PC operating systems could be wiped out fast by a rival with a better technology. Another theory, of “contestable markets”, allows some, rather extreme, economists to claim that even a firm with a 100% market share is not a nasty monopolist: if it is the least bit inefficient or over-pricing, a more efficient rival will contest the market and may drive it out.

And then what is “the market” at issue? Is Coca-Cola, say, in the market for colas, for carbonated soft drinks, or for all liquid refreshments? In Europe, Formula One has a 100% monopoly of its kind of motor-racing; but viewers can always watch some other kind, or racehorses, or porn videos. There can be no clear-cut answer to that sort of argument. One thing, though, is clear. Many markets now stretch outside any one country. Increasingly, global antitrust regulation would make sense. Yet that may be far away. Witness even the EU, in theory a single market: it has an antitrust arm—but so do its member states. How many national politicians will readily hand over to some international body the chance to cut the local Rockefeller down to size?

Hard work, if you can get it

Dec 23rd 1999

From The Economist print edition

THE observant Henry Mayhew recorded, in "London Labour and the London Poor", one 1850s labour market:



The dock gates at half-past seven in the morning. Congregated masses of men of all grades, looks and kinds. Some in half-fashioned surtouts burst at the elbows, others in greasy sporting jackets, with red pimpled faces, others in the rags of their half-slang gentility, their velvet collars worn through to the canvas. Others, again, with the knowing thieves' curl on each side of the jaunty cap; here and there a big-whiskered Pole. Some loll outside the gates, smoking the pipe forbidden within; these are mostly Irish.

Presently the stream pours through the gates; the "calling foremen" have made their appearance. Then begins the scuffling and scrambling forth of countless hands high in the air, to catch the eye of him whose voice may give them work. As the foreman calls from a book of names, some jump up on the backs of others, to attract his notice. All are shouting. Some cry aloud his surname, some his Christian name, others call out their own, to remind him they are there, now in Irish blarney, now in broken English.

It is a sight to sadden the most callous, thousands of men struggling for one day's hire, in the knowledge that hundreds must be left to idle the day out in want. For weeks many have gone there, and gone through the same struggle, the same cries; and have gone away without the work they had screamed for.

And the hiring system, used in New York (see "On the Waterfront") as in London, lasted little changed until 1967.

Millennium issue: Japan’s zaibatsu

Yes, General

Dec 23rd 1999
From The Economist print edition

1945

ON NOVEMBER 6th 1945, the supreme commander of the occupying Allied forces in Japan, General Douglas Mac-Arthur, changed forever the way the Japanese did business. So he thought. He ordered the break-up of the *zaibatsu*, the huge industrial conglomerates which in 50 years had transformed Japan from a backwater into a world power. The families that owned them were shocked to be blamed for Japanese militarism. But with their concentrations of industrial power, cartels, state-led investment and feudal management, the *zaibatsu* also offended American notions of business. Yet they had served Japan well—and were still to do so for decades.



Not America, but it worked

It was no bourgeois revolution that created the *zaibatsu*. The oldest, the house of Mitsui, had been run by merchants since its warrior-caste samurai founder hung up his sword in 1616 to brew sake and soy sauce. But when the new Meiji government of 1868 put an end to feudalism, it did not look to rich Tokyo merchants like Mitsui to lead Japan’s industrialisation. It turned to the samurai, noble but impoverished, who over centuries of peace had become bureaucrats.

With cronies in government, these samurai secured lucrative monopolies, subsidies and, especially, cheap state assets; the state had made some experiments in industrialisation itself, but sold off the results in the 1870s, to rescue its finances. Yataro Iwasaki, for instance, founder of Mitsubishi, was given a subsidised shipping monopoly in return for his help ferrying troops to Taiwan during a military expedition in 1874.

This rapid concentration of economic power among a few samurai families suited the Meiji reformers fine. Japan, like China, had seemed to be heading for semi-colonial status, with foreigners trading on highly favourable terms out of six of Japan’s ports, and controlling its international shipping. To compete as an equal, Japan must modernise fast, and that, reasoned the government, required big companies. With their close ties and obligations to government, the *zaibatsu*were amenable to guidance, as in the merger in 1885 of Mitsui’s and Mitsubishi’s shipping interests. By 1930, during which time recession and two banking crises had further favoured the strong over the weak, just four houses dominated the economy: Mitsui, Mitsubishi, Yasuda and Sumitomo.

The *zaibatsu* were attentive students of western practice. But rather than specialise, as foreign firms by then mostly did, they gained scale through agglomeration, with a family-run holding company typically controlling financial, manufacturing, mining, shipping and trading units. These core companies in turn controlled hundreds of sub-contractors. Interlocking directorships and the 1920s innovation of lifetime employment further encouraged group solidarity. This all gave the *zaibatsu* a distinctly feudal character, with thousands of workers pledging allegiance to their house.

Ties with the state grew stronger still in the 1930s. The government freely used cartels to manage surplus capacity during the great depression, and persisted in this line as the *zaibatsu* switched out of light industries like textiles into chemicals and heavy industries. In 1937, a law rationed *zaibatsu* bank loans to "nationally important" industries, a habit which survived in reduced form until well into the 1980s. As the army expanded into China, the *zaibatsu* went with it, taking over Chinese mines, utilities and textile mills, and used Chinese and Korean slave labour in their own mines at home. By the time the army had turned south to secure the oil fields of South-East Asia, Mitsui had become the biggest private business in the world, employing about 1m non-Japanese Asians.

General MacArthur at first seemed bent on finishing off the *zaibatsu*. The families were purged, corporate use of their names banned, shares in their holding companies sold to the public. Then came the cold war. American priorities changed. Just as with far-from-denazified Germany, a strong Japan came to matter more than a fair one. Of 300 companies picked for break-up on antitrust grounds, just 20 went under the mallet. The holding-company shares were bought by banks and big businesses, which began to put their groupings together again.

What emerged were the *keiretsu*, bound neither by family ties nor holding companies. But cross-shareholdings and interlocking directorships resurrected a good deal of the old group solidarity, and even the family names were allowed into circulation again. The Americans did purge the notorious home-affairs ministry. But other bits of the bureaucracy, along with Japan's brand of state-led growth, remained largely intact.

Just as it had before, this model seemed to work well. Only as the 1990s brought an era of global competition—and, in Japan, recession—did the Japanese turn against it.

Millennium issue

The root of all evil?

Dec 23rd 1999

From The Economist print edition

"THERE are few ways", thought Samuel Johnson, "in which a man can be more innocently employed than in getting money." Many thought otherwise. For much of the millennium, the church preached, with St Paul, that

the love of money is the root of all evil,

—even if it notoriously practised the opposite. Likewise:

1597, Francis Bacon:

Money is like muck, not good except it be spread

(as he himself spread it lavishly, especially on his own grand houses, having got it, often enough, in ways that were hardly innocent). More persuasively:

1667, John Milton:

Riches grow in hell.

1807, William Wordsworth:

Getting and spending, we lay waste our powers.

1840, French economist Pierre-Joseph Proudhon:

Property is theft.

1884, Karl Marx:

Money is the alienated essence of man's work and existence.

1891, Leo Tolstoy:

Money is a new form of slavery.

1928, Bertolt Brecht, via a character in his "Threepenny Opera":

What is robbing a bank compared to owning a bank?

1940s, Mahatma Gandhi:

Honesty is incompatible with the amassing of a large fortune.

To which it is fair to add the comment of Sarojini Naidu, one of Gandhi's fellow marchers for Indian liberation:

If you knew, Bapuji (father), how much it costs us to keep you in poverty

—costs which a great Indian industrialist, G.D. Birla, did much to finance.

Millennium issue: FACE VALUE

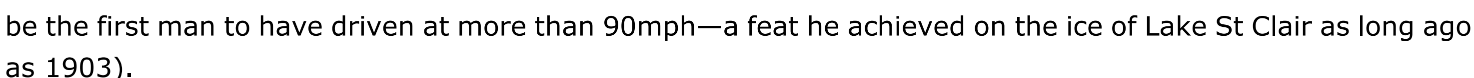
Putting America on wheels

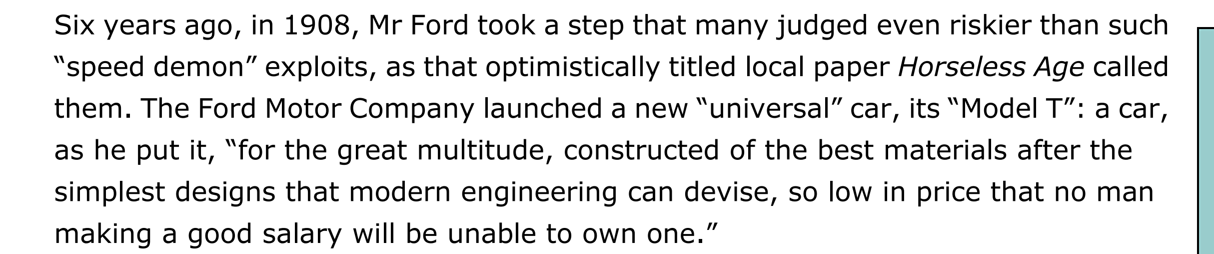
Dec 23rd 1999

From The Economist print edition

Henry Ford, a Michigan entrepreneur, thinks any American on a good salary should be able to afford a motor car. Yes, really—and he thinks he knows how to make it possible

THE motor car, alas, is with us to stay; dirty, noisy, unreliable and dangerous it may be, but it is useful too. The question is: useful to whom? Few of us, after all, despite the prosperity of this early 20th century, can afford a "chauffeur" (and who but the daredevil young want, or even know, how to drive themselves?). Yet one far from youthful American has come up with a bold answer: useful to everybody. Henry Ford, a Michigan inventor and entrepreneur, wants to put America on wheels.

Ever since the 13-year-old Mr Ford saw his first steam engine, in 1876, he has been in love with machines. As a young farmer, he was much more interested in gadgets than crops. And when he at last got a job as an engineer with the Edison Illuminating Company in Detroit, he spent all his spare time playing around with cars, building his own "quadricycle" in 1896. Since then he has been one of the pioneers of American motoring, designing, building and racing cars (he claims to

be the first man to have driven at more than 90mph—a feat he achieved on the ice of Lake St Clair as long ago as 1903).



Six years ago, in 1908, Mr Ford took a step that many judged even riskier than such "speed demon" exploits, as that optimistically titled local paper *Horseless Age* called them. The Ford Motor Company launched a new "universal" car, its "Model T": a car, as he put it, "for the great multitude, constructed of the best materials after the simplest designs that modern engineering can devise, so low in price that no man making a good salary will be unable to own one."

Speeding along

United States' passenger-car output, '000

Year	Ford	Total US production
1903	1.7	11.2
1904	1.7	22.1
1905	1.6	24.2
1906	8.7	33.2
1907	14.9	43.0
1908	10.2	63.5
1909	17.8	123.9
1910	32.1	181.0
1911	69.8	199.3
1912	170.2	356.0
1913	202.7	461.5
1914	308.2	548.1
1915	501.5	895.1
1916	734.8	1,525.5
1917	622.4	1,745.7
1918	435.9	943.4
1919	820.4	1,651.6
1920*	419.5	1,905.5
1921†	903.8	1,468.0
1922†	1,173.7	2,274.1
1923†	1,817.9	3,624.7

August 1st to July 31st of following year
*August to December 31st
†Calendar years

Sources: US Department of Commerce; "Ford: decline and rebirth 1933-1962" by A. Nevins and F.E. Hill

Daredevil that was. Even now, it looks bold: as rich a country as Britain has not 150,000 cars, and a good one costs £400 ($1,950, to our American readers), more than many a house. Yet Mr Ford has gone far: he personally, we admit, has not till now figured in *The Economist*, but, as we reported last August, the 3,734 American cars sold to Britain in 1911 outnumbered those of 1904 by six to one, and their average price, at £158, was 25% lower. In contrast, Britain's imports from France, once the world leader in this industry, nearly halved. No wonder: they cost twice the American price.

How has it been done? Many expected Mr Ford to fail, like most (including two of his own) of the 485 car firms set up before he launched his Model T. The car was a huge gamble. While other makers rushed upmarket—one car offered electric curlers in the back, for female passengers whose coiffure might need refreshment—Mr Ford proclaimed his "a farmer's car". It has few accessories and little comfort. But it has ample clearance; it is light; its engine can be used to run mechanical attachments; and it is easy to understand. Yes, but how has he kept down the price—nay, cut it to

$550, 35% less than in 1908?

One answer has been skilful finance. Mr Ford, at first, did not so much make cars as design and assemble them. Buying in chassis, engine and other parts from Dodge Brothers and the like, he saw that they, not he, would have to pay for most of the machine tools. Besides, he could at times get them to wait for their cash, whereas customers might put down advance deposits.

But the real secret these days lies in his production methods. Mr Ford has learned two essentials. One—nothing new, but rare in his industry, indeed in his own Detroit factory until the Model T—is the division of labour. No longer does a worker assemble much, even most, of a car. Instead, as in the pin manufacture described by Adam Smith 140 years ago, he does one simple job repeatedly; and, hence, better and faster. Second, and more novel, Mr Ford insists that all components be strictly interchangeable, each piston or engine-block, say, precisely identical with the next. Today's machine-tool technology makes this possible. Result: no fiddling or grinding-down to make piston fit block—and no time wasted.

And how does the fitter get the parts? He used to fetch them from the store. Instead, first Mr Ford had them brought to him. Later, with assembly split into umpteen discrete tasks, the wheel-nut fitter (say) would walk round the hall doing his job on each vehicle. And so to Mr Ford's latest wheeze: instead of worker walking to car, bring car to worker, riding on a pair of endless belts under the wheels. Not just does this save time wasted walking; crucially, it enables management to dictate working speeds. It has slashed assembly times: by 60% for engines, 80% for axles. And so to lower costs, lower prices, higher sales, and, in virtuous spiral, even lower costs and higher sales still.

What now for Henry Ford? Not all he touches has been gold. He founded one motor company in 1899. It flopped. He founded a second in 1901. So did it. His present one, costing under £6,000 to start in 1903, made profits several times that sum within 15 months. Yet its figures then see-sawed, and it had a dreadful 1905-06; because he went too far upmarket, says Mr Ford, hence his Model T. Many, a few years ago, thought the smartest man in Detroit was Billy Durant, of General Motors, who had bought up a basket of motor companies, rather than place all his bets on one car.

Mr Ford has proved them wrong: 17,700 cars built in 1908-09, 202,000 in the 12 months to last end-July. So "what now?" surely means more (and more widely: he already builds in Canada and has a depot in Britain). As to volumes, enthusiasts see no limit. Mr Durant in 1908 suggested America might soon be building 1/2m cars a year. He was publicly derided by a leading banker. Yet this year that figure will be exceeded. Indeed some say that within ten years Mr Ford alone may be building not 1/2m but 2m. Even if not, he has brought the world two gifts rich in promise: the moving assembly line (not just for his industry, surely) and the resultant low-cost "mass production"—we offer him the phrase—that could make this (not just in America) the century of the motor car.



PRINT EDITION
FINANCE AND ECONOMICS

Millennium issue

The key to industrial capitalism: limited liability

Dec 23rd 1999

From The Economist print edition

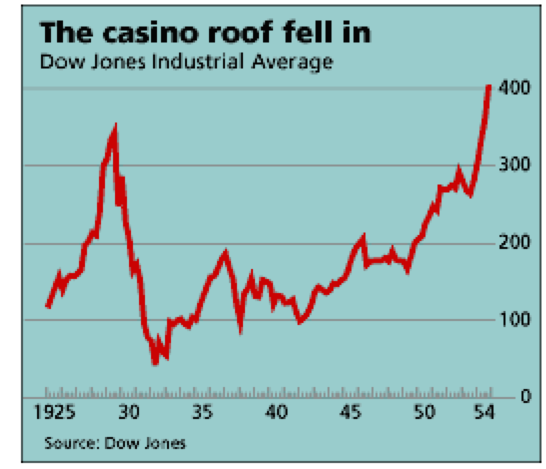
The modern world is built on two centuries of industrialisation. Much of that was built by equity finance. Which is built on limited liability

1811

THERE had been stockmarket crashes before, but never one so widely felt and so devastating. When the Dow industrial average fell by half in a few days in October 1929, it was not just rich financiers who lost their shirts. During the 1920s, share-trading had become a popular sport. Wall Streeters had persuaded the public that in the "new economy" shares were as safe as bonds; the financial district became New York's biggest tourist attraction. Passengers on Cunard liners could buy and sell shares via radio telegraphy (a Europe-bound Irving Berlin was one taker). President Herbert Hoover sniffed about bellboys speculating on share prices.

So the crash brought a political backlash, sharpened by depression: by 1932, America's GDP was around 60% of its 1929 value, 25% of the workforce out of work, and the Dow wavering at about one-seventh of its pre-crash high. The share-price excesses of the 1920s were widely blamed. How, people wondered, could America have set such store on equity, which, far from being as safe as bonds, was, in Keynes's phrase, "casino capitalism"? Seventy years on, everybody loves shares. Yet the question remains pertinent.

Shares were first issued in the 16th century, by Europe's new joint-stock companies, led by the Muscovy Company, set up in London in 1553 to trade with Russia. (Bonds, from the French government, made their debut in 1555.) Equity's popularity waxed and waned over the next 300 years or so, soaring with the South Sea and Mississippi bubbles, then slumping, after both burst in 1720. But share-owning was mainly a gamble for the wealthy few, though by the early 19th century in London, Amsterdam and New York trading had moved from the coffee houses into specialised exchanges. Yet the key to the future was already there. In 1811, from America, came the first limited-liability law.



The concept of limited liability, whereby the shareholders are not liable, in the last resort, for the debts of their company, can be traced back to the Romans. But it was rarely used, most often being granted only as a special favour to friends by those in power. Then in 1811 New York state brought in a general limited-liability law for manufacturing companies. Its popularity, and the flight of capital to states with limited liability from those without, led most American states to follow suit. In 1854, Britain, the world's leading economic power, did so too.

The Economist disapproved: if limited liability was desirable, we said, market forces would provide it. But by 1926 this paper had been converted, suggesting that the nameless inventor of the concept might earn "a place of honour with Watt, Stephenson and other pioneers of the industrial revolution".

Our second thoughts were right. Before limited liability, shareholders risked going bust, even into a debtors' prison maybe, if their company did. Few would buy shares in a firm unless they knew its managers well and could monitor their activities, especially their borrowing, closely. Now, quite passive investors could afford to risk capital—but only what they chose—with entrepreneurs. This unlocked vast sums previously put in safe investments; it also freed new companies from the burden of fixed-interest debt. The way was open to finance the mounting capital needs of the new railways and factories that were to transform the world.

But was this perhaps a zero-sum game, making equity less risky only by making debt more risky? No, argues David Moss, an economist at Harvard Business School, in a forthcoming book: the benefits of putting a ceiling on the potential losses faced by shareholders far outweighed the cost of a slightly higher risk of debt default. Certainly, the markets thought so: in 1860, British government bonds accounted for half the total market capitalisation of securities in London; by 1914, under 5%, thanks mainly to the rise of equities. Meanwhile, the explosion of trading in railroad, steel, chemicals and other shares helped New York overtake London as the world's leading financial centre.

The crash of 1929 made the public aware for the first time that, for all their merits, equities had serious flaws (as did Wall Street brokers, happy to sell their own portfolios before those of their clients). Unsurprisingly, confidence in equities recovered only slowly, and then thanks only to tougher regulation of Wall Street and gradual economic recovery. The Dow did not exceed its 1929 high until 1954. Even then, after a bull market in the 1960s, between 1968 and 1982 the Dow lost three-quarters of its value in real terms; in August 1979 *Business Week* asked on its cover whether equities were dead.

Since then, however, with the notable exception of Japan, and a brief wobble in October 1987, shares in rich countries have mostly been a one-way bet, while countries that once shunned shareholder capitalism now have flourishing if volatile stockmarkets. The total value of shares in listed companies worldwide is now some $28 trillion. And the one-time yield gap, the dividend yield higher than the fixed interest paid by bonds, to make up for equity's greater risk, long since became a minus figure; for shareholders over the past 20 years capital growth has more than amply justified the risk.

Millennium issue: Banking

Those Medici

Dec 23rd 1999

From The Economist print edition

1400s

FLORENCE was the centre of the Renaissance. By no accident, it was also at the time the centre of an industry that has marked the West no less: banking. And at the centre of that sat the Medici family. This one family supplied four popes and two queens of France, and ran Florence, with a couple of interruptions, for almost 400 years. Its power emanated originally from the family bank. Italian financiers (known generically, and inaccurately, as "Lombards", hence London's Lombard Street) were pre-eminent in their age. And among them the house of the Medici was pre-eminent, the most powerful financial institution in all of 15th-century Europe.

Set up in 1397 by Giovanni di Bicci de' Medici, who had managed a bank in Rome before moving to Florence, the Medici bank lasted until 1494, when it collapsed, a victim of depression, internal strife and French aggression. Until its declining days, the power it wielded within Europe foreshadowed that wielded by the Rothschilds 400 years later. And, happily, the bank kept good records.

The Medici were not great innovators in their methods. But they used the techniques newly developed in Italy, or still being so, to their fullest advantage: things like double-entry book-keeping, bills of exchange and book transfers.

The bank, like any modern one, held deposits and made loans, dealt in bills of exchange, changed money and conducted business abroad. Each of its branches was a partnership, under (until 1455) a central holding company. This seems to have been a Medici innovation.

The bank grew rapidly. At its widest, it had nine branches outside Florence. It also had many correspondent banks. Though the scale of its network was not new—the Bardi and the Peruzzi, the great Italian banking houses of the early 14th century, had more branches and probably more power—the Medici bank was the most international of its time. And it used this network to great effect for what became its biggest client: the Vatican, to which it brought the tithes and taxes due to Rome from other branches of the church commercial in Europe.

So successful was the bank that under Cosimo de' Medici, who ruled it with an iron rod, the Medici were for a long while put in charge of papal finances. Until 1434, more than half of the bank's revenues came from its Rome "branch" (which followed the pope around on his travels). Its connections with Rome and the Vatican's reliance on it gave the bank immense clout both with other customers and with the church itself. On one occasion, the records show, the bank got the elevation of a cleric to a bishopric delayed until his father, a cardinal (yes), had repaid his own and his son's debts.

Most of the Medici bank's lending was to royalty, to finance military campaigns or lavish princely lifestyles. The sovereign risk of the day was high: both the Bardi and the Peruzzi houses were felled when England's King Edward III defaulted. Though the Medici bank's experience was not much better, its partners felt that shouldering such risks was necessary to get other business.

The bank was in trade too. Soon after it was set up, it got into wool and (more profitably) silk. Later, it secured a near-monopoly in the still more profitable trade in alum, vital to the textile industry. So diversified did it become that its Bruges branch, in today's Belgium, even helped to recruit choirboys.

Banking and trade went together. Italian merchants might, for example, lend to English sheep farmers or wool merchants, in return for lower prices. This was also one way for banks to circumvent the church's ban on the charging of interest. Another was to use foreign currency: the bank could lend, or accept a bill of exchange, in one currency and collect its debt in another, building a hidden rate of interest into the exchange rate.

After Cosimo's death in 1464, the Medici bank went downhill, though his descendants became ever more entrenched in power in Florence. His son, the sickly Piero (the gouty), took over, though he had no serious experience in banking. He was succeeded in turn by his son, Lorenzo (the magnificent), who had no luck and less judgment. In 1478, the Pazzi family managed—for all that their name means "mad"—to snatch the papal business from the Medici.

Lorenzo was succeeded by Piero, even less competent than his father and grandfather. By 1494, the bank had been forced to close almost all its branches and was teetering on the edge of bankruptcy. Piero was eventually forced out of Florence by a popular uprising, after he made a deal with the invading French. Although the Medici family came back to power in Florence, never again would Italy dominate European finance.

Millennium issue

Damned usurers

Dec 23rd 1999

From The Economist print edition

THE lending of money at interest goes back, at least, to the Babylon of Hammurabi in 1775BC. So does its regulation. For much of our millennium, in many societies that meant condemnation. The Torah goes half-way, instructing Jews that

1312

to a foreigner thou mayest lend upon interest, but unto thy brother thou shalt not.

The Koran damns interest outright:

They say, "Interest is like trade". But God has permitted trade and forbidden interest.

The Christian church had long viewed interest-taking as a sin, and a council of bishops held in France in 1312 hardened this into a threat of excommunication for those who did it, or even rulers who allowed them to. Dante, writing about that time, put usurers amid the fiery sands of the seventh circle of Hell.

In practice, as commerce developed, Muslims and Christians alike sidestepped these rules; Jews happily lent, at interest, to both, as their own selective prohibition allowed. Yet as late as 1571 an English law banned interest-taking afresh, with special penalties for rates above 10%. And though such bans, always flouted, in time were dropped, regulation of maximum rates went on; for consumer credit, till 1974 in Britain, and to this day in parts of the United States and elsewhere. Even Adam Smith supported this limitation, to stop capital being lavished at high rates on "prodigals and projectors"; so much for market choice.

And in the past 20 years some Islamic states, notably Iran and Pakistan, have tried to reimpose the Koranic ban—in practice, that is, to make bankers find ways round it.



PRINT EDITION
FINANCE AND ECONOMICS

Millennium issue: The currency

Paper gains

Dec 23rd 1999

From The Economist print edition

1661

IT TOOK Johan Palmstruch, a flawed genius as irritating as he was enchanting, five years to fulfil his dream of a freely circulating paper currency. His stubborn determination was in time to transform the economies of Europe and later the world.

In the 17th century, as before and for a long time after, many deals and debts, if not settled in coin, were paid in kind, in goods or labour. Could a piece of paper represent value? It would be flimsy testament indeed. But it would be convenient—if it would work.

Palmstruch thought it would. In 1656 he had founded the Stockholm Banco, a private company that intended to issue paper money, enjoying royal privileges in return for a royal cut. After sustained lobbying and a public-relations effort that would be impressive today, an issue of bank notes followed in 1661. Here was Europe's first paper currency (China's first version had appeared in 1024), one that would still be recognisable as such amidst today's state-issued confetti.

From the outset, half of the bank's net profits were claimed by the crown. Sweden's chancellor was chief regulator, an instant example of all governments' instinctive liking for control of paper finances. Briefly, amazingly, the new-fangled money worked. But, heady with success, the venture over-reached itself, issued too many notes and crashed disastrously in 1667. Palmstruch was disgraced and—fickle government—sentenced to death, a fate later commuted to a prison term. But the genie was out of the bottle: paper money had arrived. Nothing would ever be the same again.

The Swedish experiment, to be frank, was a glorious failure. Born of necessity as much as of insight, it answered an absurd practical problem. Before Palmstruch's paper, Sweden had one of the most ridiculous currencies to burden the millennium. Huge ingots of copper, itself a depreciating asset, were the weighty "store of value" and means of exchange. Merchants and citizens struggled to fulfil their obligations with unwieldy piles of metal. The need for something better was clear. And paper had a merit, especially in Sweden: it was not only lighter than copper, but easier to come by than silver or gold.

Sweden had one of the most ridiculous currencies to burden the millennium

Easier to print too, and that was the problem. Would anyone trust it? His implementation may have been flawed, but Palmstruch had done plenty of thinking, and central to it was the need for credibility. He worked hard to ensure it. His notes were the genuine article. Signed by no fewer than eight local dignitaries, they bore watermarks, personal seals and a fancy border. No one could question their authenticity. The bigger question was whether they represented real money. Here he fell down. Once the supply of paper became too great, doubt set in and the venture was doomed. With paper, confidence is everything, as many a central bank has since then discovered.

Palmstruch was ahead of his time. It took another maverick to embark on the next serious venture into paper: John Law, who nearly invented modern financial markets before succumbing to the same state aversion to controversy. In early 18th-century France he won patronage for a Banque Royale that would issue paper notes backed by silver. Unfortunately, seduced by the New World, he also over-reached himself: as he said later,

If I had the work to do over again, I would proceed more slowly but more surely, and I would not expose the country to the dangers which must necessarily accompany the sudden disturbance of generally accepted financial practice.

In a different century Law would have invented what we now call generally accepted accounting principles. In 1720 his grand scheme crashed and he fled into exile.

Palmstruch and Law did the hard work. Their successors had to struggle only with the problem of credibility, a legacy of the speculative reputation attached to paper bills. In 1719 an English commentator remarked that "men don't yet esteem [bills] as money"—this despite the often generous rates of interest on offer. Paper money, it seemed, had to be convertible into bullion on demand for it to be accepted. Yet, paradoxically but unsurprisingly, governments both local and national longed to issue it precisely when physical coinage was at its scarcest or was collapsing in value. *Caveat emptor* (or *venditor*) had found a new meaning—as the paper *assignats* issued by revolutionary France would soon prove. Initially interest-bearing bonds, they were swiftly redefined as money, and lost value hand over fist.

The switch to paper took decades, but it was unstoppable. Early on, Adam Smith recommended the "substitution of paper in the room of gold and silver money". In the late 19th century, economists were still arguing about the merits of bimetallism, a monetary system in which paper notes were backed by both gold and silver, rather than gold alone. During the 20th century that debate became academic, when paper money was finally separated from any metallic equivalent.

With the breakdown of the gold standard after the first world war also came the awful revenge of paper, Germany's hyper-inflation. Yet paper remains ubiquitous. One day, maybe, first plastic and now e-money will have driven it into history like Sweden's copper ingots and Britain's gold sovereigns, cowrie shells or the cigarettes into which Greeks briefly and unofficially switched at a hyperinflationary moment soon after their liberation from Hitler's troops in 1944. But, for now, paper still rules.

Millennium issue: German hyperinflation

Loads of money

Dec 23rd 1999

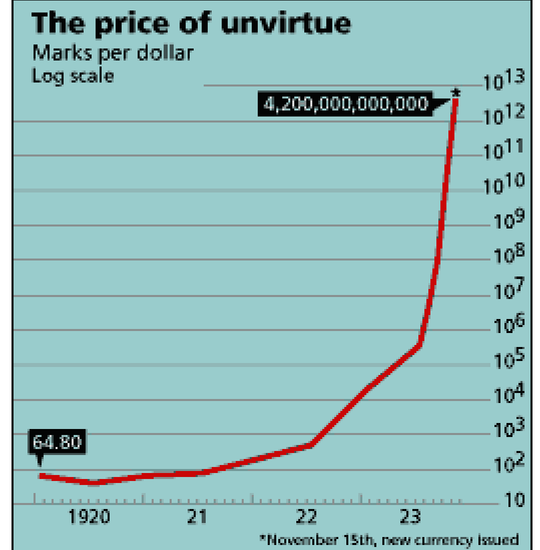
From The Economist print edition

1923

“FOR these ten marks I sold my virtue,” were the words a Berliner noticed written on a banknote in 1923. He was buying a box of matches, all the note was worth by then. That was in the early days. By November 5th, a loaf of bread cost 140 billion marks. Workers were paid twice a day, and given half-hour breaks to rush to the shops with their satchels, suitcases or wheelbarrow, to buy something, anything, before their paper money halved in value yet again. By mid-November, when a new currency was issued, prices had added twelve noughts since the first world war began in 1914.

Currencies have collapsed, and inflation turned hyper-, in other places: in Shanghai awaiting Maoist takeover in 1949, in Argentina in 1989, when, in July alone, prices rose 197%. But Germany’s was the most spectacular bout of inflation ever to hit an advanced economy; and none has had more awful results. It was not the main reason for Hitler’s rise, but it was as the leader of a failed mini-coup during the crisis that most Germans first heard of him. And the anger of those who had lost their all fed Nazism’s growth.

The origins of the hyperinflation lay in the war, and the readiness of Germany’s legislature to let the authorities suspend the individual’s right to convert banknotes into gold. The central bank was also authorised to use government and commercial paper as part of the reserves it was required to hold against newly issued notes. This freed the government to finance the war by running the printing presses, with the usual effect: prices rose. By the end of 1918 the mark had fallen more than 50% against the dollar.



The government continued to run a huge deficit. From 1919 to 1923, taxes never exceeded 35% of expenditure. The gap was covered by heroic money-printing. The public finances, bad enough anyway, were worsened by the Allies’ demands for reparations, enough not just to compensate for damage done but to pay the pensions of Allied combatants. Even ignoring the part due to be paid in some bonds of dubious worth, the total was $12.5 billion—a huge amount for the time, about half Britain’s GDP. How could it be found? The Allies did not want to see German exports boom, nor were they united in encouraging payment in labour to rebuild Europe. So—roll the presses. Notes in circulation increased from 29.2 billion marks in November 1918 to 497 quintillion (497 plus 18 noughts) five years later.

As early as 1919, when the peace treaty was signed, Keynes had warned that the settlement imposed on Germany would ruin it. By early 1922, even the *Times*, much given to berating Germany for allegedly failing to meet its promises to disarm, was warning that the Allied demands would lead to

further production of paper marks on a massive scale. In the present state of German finances, that would mean a big step on the way to Moscow.

To Auschwitz, in the event, but the analysis of money-printing was sound enough. In vain: the victorious powers shut their ears.

Later that year, the German government defaulted on its reparations payments. In response, in January 1923 French and Belgian troops occupied the Ruhr, Germany's industrial heartland. The direct economic cost was huge; the Ruhr provided 85% of Germany's coal. But, besides that, the government backed a campaign of passive resistance—in effect, a general strike. To pay the 2m workers involved, it printed more money. This was enough to tip the economy over the edge.

Prices roared up. So did unemployment, modest as 1923 began. As October ended, 19% of metal-workers were officially out of work, and half of those left were on short time. Feeble attempts had been made to stabilise prices. Some German states had issued their own would-be stable currency: Baden's was secured on the revenue of state forests, Hanover's convertible into a given quantity of rye. The central authorities issued what became known as "gold loan" notes, payable in 1935. Then, on November 15th, came the Rentenmark, worth 1,000 billion paper marks, or just under 24 American cents, like the gold mark of 1914.

Prices quite soon stabilised, but the damage was done. Millions had seen their life savings evaporate, and were ready later to believe that Germany had been stabbed in the back by a conspiracy of Jews, international financiers and local appeasers. Elias Canetti, a German writer, likened the Nazis' treatment of Jews to the great inflation: depreciation to the point where they could be "destroyed with impunity by the million". He strained the analogy. But he was right that a debauched currency was one reason why a whole country could lose its virtue.

Millennium issue

Whose fault?

Dec 23rd 1999

From The Economist print edition

1500s

MONEY-LENDERS, among whom Jews were prominent, had been made scapegoats for price rises long before Hitler. In the 16th century, they were the first to be blamed for a prolonged inflationary surge that pushed European prices up fourfold over those 100 years—little enough by today's standards, but at the time unprecedented and disturbing.

Soon, though, another explanation became fashionable—imports of gold and silver from South America. Columbus had come for spices, and found none. But later arrivals soon found riches: gold from Colombia and Mexico, silver from Peru. Very soon, South America was producing one-third of the world's gold. Just as in ancient Greece after the opening of gold mines in Macedonia, a larger supply of the metals of coinage meant higher prices, first in Spain and then across Europe.

Scholars have since questioned this explanation too, pointing out that the great inflation was under way well before bullion from the Americas began to arrive in large quantities. So why did it happen? Maybe because population, and thus demand, was outpacing improvements in productivity (of land, notably) and supply. The greater availability of gold and silver may have made the long inflation worse, but it was not the underlying cause.



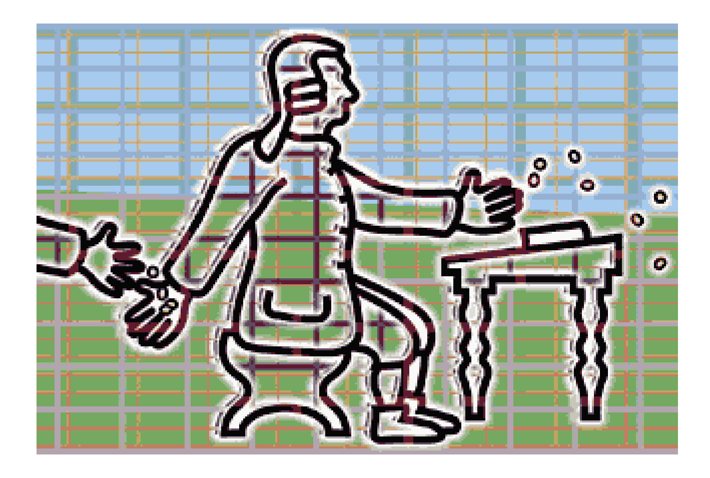
PRINT EDITION
FINANCE AND ECONOMICS

Millennium issue: ECONOMICS FOCUS

Introducing big government

Dec 23rd 1999

From The Economist print edition



Adam Smith's new book is winning praise from every quarter. A delightfully entertaining account of how nations grow wealthy, it has the makings of a classic. But it is a more radical work than it seems

1776

"AN INQUIRY into the Nature and Causes of the Wealth of Nations"* broadens the study that Adam Smith began in "The Theory of Moral Sentiments", published to great acclaim in 1759. Nearly 20 years on, Mr Smith's scientific purpose, much as before, is to reveal the hidden foundations of the decent society. "Wealth of Nations" also has a polemical aim—a pressing one, in view of current hostilities between Britain and its American colonies. It seeks to overturn Britain's entire system of international trade.

Mr Smith's earlier book laid great emphasis on the spirit of benevolence. It argued, paradoxically at first sight, that the well-spring of benevolence is self-love, combined with man's capacity of sympathy with his fellows. Self-love and sympathy, mediated by the customs and institutions of civilised society, guide man to behave virtuously towards man. In his new work Mr Smith develops this theme. Again he emphasises self-love, but with a twist. Now it is the needs of commerce that mediate. The unintended result is as before: a more decent and prosperous society, as if shaped by an "invisible hand".

The idea is hardly new. The ability of a well-ordered polity to harness selfishness to the greater good, without coercion or overt design, has been described by others—notably by Bernard Mandeville in "Fable of the Bees". Mr Smith's contribution is to take the idea seriously, elaborate it magnificently, and examine all its consequences.

"Wealth of Nations" shows how self-interest, tamed by sympathy and constrained by economic rivalry, leads to a widespread prosperity that Mr Smith calls "universal opulence". How? People desire to produce more, in order to consume more. The key to producing more is the division of labour. When workers specialise, they become more productive; on top of this, opportunities to mechanise become easier to identify and exploit. (Mr Smith is a great believer in machines.) But the division of labour can flourish only in a system that lets people trade their labour, and the goods they produce, without interference. Restrictions on domestic trade have been declining of late, and that, he says, is why Britain has been getting richer.

Mr Smith, with a skill that justifies his reputation as a master rhetorician, next argues that what is true for individuals is equally true for nations. Interference in trade among countries is as harmful as interference in domestic trade. It violates natural liberty, and militates against universal opulence. Producers may demand protection from rivals at home and abroad, but this protection is bought at others' expense. Current monopolies of trade with the colonies compound the harm, by uniting the colonists against British rule. As a matter of justice, and of economic and political expediency, the rule should be liberal trade.

In all this, it is impossible to resist the force of Mr Smith's argument: the reader is (sometimes too quickly) swept along by his flow of stories, examples and logic. If the book wins acceptance for the idea that liberal trade at home and abroad serves the public good, then it will have deserved its warm reception. But there is another and more worrying possibility.

"Wealth of Nations" is animated, to a striking, even alarming degree, by concern for the welfare of the common labourer. Mr Smith endlessly deplores the idleness and cupidity of the rich, their remorseless seeking after preference that weighs on the people at large. He favours the marketplace partly—nay, mainly, it often seems—because of the curbs it places on the mighty. The sorts of economic regulation he most detests are the ones that allow the powerful and the influential to escape those restraints. In the universal opulence he seeks, the crucial word is "universal": to further this goal, and despite all his strictures about the dangers of governments acting in league with producers, he proposes an enormous extension of the role of the state.

He emphasises, for instance, the demoralising effects of the division of labour on workers. The price of making them more productive is to simplify their tasks, thereby removing what little mental stimulation their work once provided. How then to combine division of labour, necessary if prosperity is to be widespread, with a worthwhile mental life for labourers? Mr Smith's answer is radical in the extreme: universal education, at public expense. The eventual cost of discharging such an obligation might be vast—perhaps enough to rival, one day, the cost of national defence.

In fact Mr Smith envisages a wide and expanding range of government expenditures. All are motivated either by specific failures of the market to meet society's needs, or else by the spirit of economic equality that so infuses this work. Thus Mr Smith emphasises the rule of law and security of property, envisaging that the costs of defending both will rise as the economy grows more prosperous. Why will the costs rise? Partly because as the nation's wealth grows, so will "avarice and ambition in the rich", who will increasingly seek to add to their wealth by force or stealth, rather than legitimately through market exchange. And Mr Smith foresees big increases in the public cost of other "institutions for facilitating the commerce of society"—roads, canals, bridges and other works necessary for universal opulence but too costly to be undertaken at private expense.

It is all very well, but where will it stop? Mr Smith's intellectual heirs may be less judicious than he is in seeking to keep government and market in a harmonious balance. Today, "Wealth of Nations" commands attention because of its timely argument on foreign trade (and because it is such a shamelessly good read). A century or two from now, trade protection will surely be a distant memory. Mr Smith's book may then be remembered for laying the intellectual foundations of, for want of a better term, big government.

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* Two volumes, to be had of W. Strahan and T. Cadell, London. 1l. 16s (or of the online booksellers Amazon.com and Amazon.co.uk).



Millennium issue

Hang on lads, I've got an idea

Dec 23rd 1999

From The Economist print edition

Writing at the beginning of the 17th century, Francis Bacon, an English philosopher of science, maintained that the three most important inventions were gunpowder, the magnetic compass and printing. We agree, and add another seven made after Bacon died

c1045

IT MAY seem a long way from the inky blocks used in the first printing presses to the electronic bits and bytes that make up this article if you are reading it on the World Wide Web. But there is a connecting thread. Like the current information revolution, the first (and more important) one, the invention of movable-type printing, depended on the recognition that messages can be broken down into units that are themselves almost meaningless, and that these meaningless units can then be manipulated in an infinite variety of ways to create an infinite variety of meaning.

The origin of print is controversial. But Pi Sheng, a blacksmith and alchemist who lived in China in the 11th century, has as good a claim as any to have been the person who had the insight on which all subsequent information technology is built. He made clay copies of the ideograms in which Chinese is written, and baked them in a fire. Then he stuck them on an iron plate using a mixture of ash, resin and wax, and held them in place with an iron frame. By covering the result with ink, and impressing it on paper (another Chinese invention), messages could be mass-produced.



Comes the revolution

Even the greatest inventor, however, is constrained by his cultural circumstances. Ideograms are too meaningful. As a result, there are too many of them. Modern scholarship recognises about 50,000 Chinese characters, a number that would not have been much different 1,000 years ago. And although the more complex characters can often be decomposed into simpler elements, the process of doing so is so unsystematic that mechanising it efficiently proved impossible. Printing could only thrive in a culture with a less sophisticated writing system—an alphabet.

Nobody knows how the idea of movable-type printing filtered from Asia to Europe. None of the European adventurers who wrote up their travels through Asia in the late Middle Ages remark on it. Nor is there any other written evidence of a connection. Some scholars, indeed, claim that a European had the insight independently. But whether it was invention or plagiarism, the crucial moment happened in Strasbourg in the 1430s. This was when Johannes Gutenberg, a goldsmith, first had the idea of producing small, regular blocks of steel with letters on them. Eventually, instead of printing from these directly, he employed them to stamp out intermediate dies which were then used as moulds to mass produce letter blocks made of a lead alloy. These were fitted into frames (or "forms"), covered with ink and, with the aid of an adapted wine-press, used to print individual pages.

Quite a bit is known about Gutenberg's printing career, thanks to his financial and legal troubles. In 1439, the heirs of a businessman in Strasbourg, where Gutenberg was then living, brought a lawsuit against him. The papers from the suit tell of Gutenberg, who obviously fancied himself as an inventor, working on three processes—the polishing of precious stones, the manufacture of mirrors, and a "new art" involving the use of a press and some pieces and forms.

Gutenberg moved to Mainz in 1448, and found himself a backer. Johann Fust, a local venture capitalist, loaned him 800 guilders in 1450. He later agreed to let Gutenberg have a further 800 guilders. But the two men fell out in 1455, and Fust sued Gutenberg. Nevertheless, two years later, the first printed book in Europe, the Mainz psalter, came off Gutenberg's press.

After that, ironically, the written record of Gutenberg's life peters out (except for one document recording yet another unpaid debt). Indeed, the psalter, and also the Bible that is attributed to Gutenberg, may actually have been produced by Fust and an associate called Peter Schöffer. If this is true, these two thus introduced another fine tradition of information technology that has persisted until today—that of the financial backers of an invention "shooting the inventor" as soon as they are sure his invention is commercially viable.

But although printing may not have improved Gutenberg's life, it revolutionised the lives of his fellow Europeans. The 26 inherently meaningless letters of the Roman alphabet suited the technology perfectly, and within three decades there were print shops in every corner of the continent. It is reckoned that as many books were produced in the 50 years after Gutenberg's invention as in the 1,000 years before it.

And if printing did not actually cause the intellectual changes taking place in Europe at the time, it certainly catalysed them. As printers sought new products, translations took off. Religious works were converted from Latin into the vernacular. Latin and Greek authors too were translated into modern languages. And since books were circulated widely, they tended to act as linguistic standards. They helped, for example, to impose the dialects of London and Paris on England and France. Whether the web, the printing-press's latest descendant, will make Californian the language of the world, remains to be seen.

Millennium issue

Pointing to the future

Dec 23rd 1999

From The Economist print edition

1180

ARTHUR C. CLARKE, a well-known writer of science fiction, once proposed three scientific "Laws" in homage to Newton's. Clarke's Third Law is that "any sufficiently advanced technology is indistinguishable from magic". In the 12th century, of course, technologies were less advanced than in the 20th. And people were, perhaps, more credulous in the matter of magic. So "sufficiently advanced" would not have been such a hurdle to leap. But even today, the properties of magnets can seem magical. Eight hundred years ago, the discovery that a piece of lodestone (a magnetic ore of iron) which is free to turn will always point north-south must truly have seemed spooky.

Who first made this discovery is open to doubt. Probably, he was Chinese, but he may have been Arab or European. The first records of such primitive compasses coincide closely enough in time that diffusion from any one of these cultures to the other two could plausibly account for the facts. What is in no doubt, however, is who—as in the cases of printing and gunpowder—turned a curiosity into an instrument of power.

The first mention of a compass in a European text was made by Alexander Neckam, in 1180. At that time, the lodestone needle was mounted on a cork and allowed to float in a bowl of water. The idea of mounting it on a pivot surrounded by a circular scale came in 1269. It was another 150 years, however, before serious, long-distance voyages were mounted with its aid. But in 1418, the Portuguese reached Madeira and in 1427, the Azores—about a third of the way to America, had they known it. Ferdinand Magellan's circumnavigation of the earth followed within a century. The spell of the compass had ensnared the world.

Millennium issue: Gunpowder

Bang, bang. You're dead

Dec 23rd 1999

From The Economist print edition

1249

STRICTLY speaking, one of Bacon's revolutionary inventions should not be in these pages. Gunpowder predates 1000, though scholars differ about just how much. Chinese party hosts were, however, certainly entertaining their guests with fireworks by the ninth century. But gunpowder without guns is scarcely worthy of the name. And guns belong squarely to the passing millennium.

It is doubtful if any one invention has revolutionised any one activity more than gunpowder revolutionised war. Before it, archers and catapults notwithstanding, war was a personal, man-to-man affair. After it, combat could routinely be conducted at a distance. And not only with bullets and cannonballs. By putting huge quantities of the stuff under things someone wanted to eliminate (city walls, the Houses of Parliament, and so on), they could simply be blown up.

Gunpowder is a mixture of three substances: carbon (in the form of charcoal), sulphur and potassium nitrate (saltpetre). And the proportions must be right. The first known recipe for gunpowder was written down by Francis Bacon's antecedent namesake Roger, an alchemically inclined monk, in 1249 (though like many of the earlier Bacon's works, it was probably recycled from an Arab manuscript). The explosive he described was composed of six parts of saltpetre to five parts of charcoal and five parts of sulphur. Later versions used more saltpetre, eventually settling on a ratio of 15:3:2.

Gunpowder works by the rapid burning of the carbon and the sulphur in oxygen released by the thermal disintegration of the potassium nitrate. The resulting hot gases expand so quickly that they push anything they come across—including cannon balls and castle gates—out of the way. Bacon, of course, knew none of that. But he did know that applying a lighted taper to the mixture produced an unprecedented bang. And so did people less pacific than an English monk.

The first recorded use of gunpowder in European warfare was at the siege of Metz in 1324. The besiegers had iron vases into which they packed the new explosive. Iron or stone balls placed on top of the result could be fired at the enemy with great force. Until that time, the balance of advantage in a siege lay with the defenders. If they had food and water, a small number of soldiers could hold a fortress for a long time. Knocking down the walls of a castle was a job for catapults and battering rams, neither of which was very effective. Scaling high walls with ladders was a risky business. As a result, rebellious barons were hard for kings to keep in check, and central authority was weak.

Cannons changed that. The castle walls came tumbling down and monarchies became more and more absolute. And when, with the aid of their compasses, Europeans began to roam the world, the same thing happened on a larger scale. A small group of soldiers armed with guns was frequently able to beat more numerous local opposition. Thus rose the West.

Guns got better and better (or worse and worse, if you were on the receiving end of them) as the years progressed. Smooth-bore, muzzle-loading muskets that relied on a piece of lighted "match" (rope soaked in saltpetre) to set off the charge were improved, first by the addition of mechanical "locks" to fire them, then by the rifling of their barrels (to ensure a true flight for the projectile), and then by breech-loading mechanisms

that did away with the need to stuff the bullet or ball down the barrel with a ram rod. And eventually the art of rocketry, hitherto useful only for fireworks, was mastered for war.

Perhaps surprisingly, however, no better explosive than gunpowder was discovered until the 19th century. But then, with the growth of modern chemistry, new ones came thick and fast. Eventually, of course, the search for a bigger bang exhausted the possibilities of chemical reactions. The physicists had to be called in and by doing what alchemists had only dreamed of—transmuting one element into another—they produced a bigger bang than either of the Bacons could possibly have imagined.

Millennium issue: Calculus

Maths in flux

Dec 23rd 1999

From The Economist print edition

1684

NOT all inventions are tangible. And one of the most profound intangible inventions of the millennium was also the cause of one of its bitterest intellectual battles. Between them, Isaac Newton and Gottfried Leibnitz created calculus, the most important mathematical discovery since the invention of algebra by Muhammad al-Khwarizmi, an Islamic scholar of the ninth century. But they argued until their deaths about who had done it first.

Calculus was a mathematical breakthrough, because it dealt with continuously varying quantities. Until the mid-17th century, maths had been required to handle only discrete variables. But Newton's interest in mechanics taxed the limit of what such classical mathematics could do. He therefore decided that the answer was to extend the boundaries of maths by inventing a system that he called "fluxions".

This worked by dividing a variable such as the velocity of a moving body into infinitesimally small units, and processing those infinitesimals instead. That made it easier to study, for example, the rate of change of velocity—a property which Newton named "acceleration".

Newton, however, was a very secretive man. When he published his theories of mechanics, he recalculated them using the older, clunkier methods of al-Khwarizmi and his successors. Fluxions remained a private weapon in his scientific arsenal.

Shortly after this, Leibnitz, a German, came to London, where he hobnobbed with Newton and many of his contemporaries at the newly formed Royal Society. When he returned to Mainz, where he was employed as a librarian to the ruling archbishop, he began work on a mathematical system that was logically identical with fluxions, but which he called "calculus".

Not being a secretive man, he published the result in 1684, and was immediately accused of plagiarism by Newton. He denied the charge (probably accurately, since Newton had still not published anything on fluxions, and would hardly have discussed his idea with a transient acquaintance). But Newton was the more powerful man, and managed to blacken Leibnitz's image comprehensively, at least in England.

Leibnitz, however, had the last laugh. For it was his system of symbols that was adopted for what is now regarded as the first step of "higher mathematics"—an invention without which most of physics and a surprising amount of biology would be impossible to understand.

Millennium issue: Steam engines

Puffed up

Dec 23rd 1999

From The Economist print edition

ALL the best inventions have a legendary "light bulb" moment. James Watt's is supposed to have been when he saw the lid of his kettle rattling. It was then, so the story goes, that he realised that steam pressure could be harnessed to do something useful.

1765

Maybe it happened that way. Maybe it didn't. Maybe it does not matter. For Watt did not actually invent the steam engine. That honour belongs to Thomas Newcomen, whose steam-powered mine pump had been around for more than half a century when Watt built his first engine in 1765. Yet the fact that the scientific unit of power is called a "watt", rather than a "newcomen", shows that subsequent generations of engineers recognise who it was that really turned the steam engine into the most important invention of the millennium.

The Watt steam engine and its successors powered the first 100 years of the industrial revolution. And the idea behind them, that heat derived from a fossil fuel could be turned into mechanical work, powered that revolution's second 100 years too, in the form of the internal-combustion and jet engines that move its machines around, and the turbines that produce its electricity. As Matthew Boulton, Watt's business partner, once said of his factory in Birmingham: "I sell here, gentlemen, what all the world desires: power."

The core of a steam engine is a cylinder that is sealed at one end and has a moving piston at the other. Filling the cylinder with steam pushes the piston out. Cooling the steam condenses it into water, leaving behind a vacuum. Atmospheric pressure then pushes the piston back down the cylinder, and if anything (such as a pump) is attached to the piston, some useful work can be done. Put more steam into the cylinder and the cycle can be repeated.

In Newcomen's engine, however, the process was extremely inefficient. Once the cylinder had been filled with steam it was cooled directly by the application of cold water. The whole thing then had to be heated up to boiling point again before the cycle could be repeated. Also, Newcomen's piston coupling could only move up and down. That was useful for pumping, but limited the engine's application to things that require a rotary motion—grinding, for example.

Watt's first insight was to have a separate condenser for the steam. This meant that the cylinder itself could be kept hot, more than doubling the machine's efficiency (admittedly from 1% to just over 2%), with a consequent saving of fuel. But it was Boulton who insisted that the new engine be able to generate circular motion, in order to expand the market for it. The result was the so-called sun-and-planet gear, which converted reciprocal motion to rotation and allowed the machine to invade the newly built factories of the late 18th century.

The result made the two men rich—not merely from selling the machines, but also by employing them to make such things as buttons for the British army, and the world's first mass-produced coins. And in the hands of others, most notably Richard Trevithick, George Stephenson and Isambard Kingdom Brunel, the steam engine went on to power the first means of transport that could travel faster than a horse or a sailing ship—the railway locomotive and the steamship. But the basic principle of pushing a piston in and out of a cylinder was maintained, even in the internal-combustion engines devised by Rudolf Diesel and Nikolaus Otto which eventually replaced steam-power.

The need to understand and improve the steam engine also revolutionised science, creating the fundamental branch of physics known as thermodynamics. The first law of thermodynamics—that energy can be neither created nor destroyed, but only converted from one form to another—turned out to be one of the handful of conservation laws that define what the basic stuff of the universe actually is. The second law of thermodynamics, that disorder increases with time, defines the universe's fate. It truly will end not with a bang but with a whimper. A profound insight to draw from the desire for a cup of tea.

Millennium issue

Man takes to the air

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From The Economist print edition

UNTIL 1783, the idea of flight was strictly for the birds. But then the Montgolfier brothers, Joseph and Jacques, discovered that if you fill a big enough paper bag with hot air, the result can lift a man. This was one invention that the Chinese—who invented paper and regularly used it to make huge lanterns—should have made but didn’t. It was to be 120 years, however, before a powered heavier-than-air machine carried a man.

Pictures of perfection

Dec 23rd 1999

From The Economist print edition

FEW tiny acorns have grown into mightier oaks than the one planted in 1839 by Louis-Jacques-Mandé Daguerre. Before that date, images could be created only by the human hand, based on what the human eye perceived. Daguerre's pictures, the first practical photographs, captured images of the world directly.

1839

Few too would be the changes in everyday life more likely to disturb a visitor from the 11th century. It is easy to overlook the ubiquity of images in the modern world. But photography, its daughter cinematography, and its stepchild television, have wrought an alteration in the visual environment that is more profound than any other in history. A millennium ago, ordinary men or women would scarcely have seen a graphic representation of the world. Even churches (at least, those in Western Europe), were generally decorated with abstract rather than naturalistic art. Now, images are everywhere. And they are idolised in a way that might give even a hardened atheist cause to wonder whether the Second Commandment does, perhaps, give good advice:

Thou shalt not make unto thee any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth. Thou shalt not bow down thyself to them, nor serve them.

Daguerre's invention relied on the observation that a chemical called silver iodide is unstable in the presence of light. It decomposes to leave metallic silver behind. By exposing a surface impregnated with it to an image formed by a lens, the image can be "captured". Others had noticed this, but their images faded, because the unaffected silver iodide also eventually disintegrated in the ambient light. Daguerre worked out how to wash away the unaltered iodide after exposure, in order to "fix" the image.

Daguerre's first photographs were made on copper plates. After exposure, these were treated with mercury vapour, to form a shiny amalgam from the deposited silver, and then with a solution of salt, to fix the image. Salt was soon replaced by sodium thiosulphate (then known as hyposulphite), which is still used, under the colloquial name of "hypo", to this day.

Photography boomed in the wake of Daguerre's invention. Paul Delaroche, an artist contemporary with him, suggested, when he first saw a daguerrotype, that "from today, painting is dead". Cynical observers of modern art might be inclined to agree with him.

But it was when the images started to move in 1895, courtesy of the aptly named Lumière brothers, that modern idolatry really began. Adding the third dimension of time to two-dimensional pictures gave them unprecedented verisimilitude. Viewers began to identify with what and whom they saw, in a surprisingly personal way. Thus was the film star born.

No one has yet cracked the problem of giving images all four dimensions. Cinematography still lacks depth. Holography, an invention developed in the 1960s, provides that missing depth, but does not yet move. Nevertheless, as the icons pour in their billions from the world's image factories, it seems that the medium truly is the message. And the message is: the graven image has won.



PRINT EDITION
SCIENCE AND TECHNOLOGY

Millennium issue: Electrification

Out of the darkness

Dec 23rd 1999

From The Economist print edition

1879

ON DECEMBER 31st 1879, the inhabitants of New Jersey were given the first glimpse of a technology that would illuminate the world. That was the day that the electric lighting system devised by Thomas Edison was put on public display at his company's workshop complex at Menlo Park. The *New York Herald* reported that

Edison's laboratory was tonight thrown open to the general public for the inspection of his electric light. Extra trains were laid on from east and west, and, notwithstanding the stormy weather, hundreds of persons availed themselves of the privilege. The laboratory was brilliantly illuminated with 25 electric lamps, the office and counting room with eight, and 20 others were distributed in the street leading to the depot and in some of the adjoining houses. The entire system was explained in detail by Edison and his assistants, and the light was subjected to a variety of tests.

Edison was not the first person to have thought of using electricity for illumination: cumbersome electric arc-lighting had been employed in public spaces and factories for a number of years. Nor yet did he make the first light bulb, nor the first generator. But he was the first person to make them commercially viable, combine them, and demonstrate the potential benefits of large-scale electrification. His small, efficient generator (its efficiency was 90%, as against the 40% of previous designs) and his cheap, long-lasting light bulb (with a life of 1,000 hours) made the domestic use of electricity practical for the first time.

It was another three years before Edison's first power station opened, on Pearl Street in New York. And not all was plain sailing. As electrification spread, Edison fought a bitter and dirty standards war with George Westinghouse over the question whether electricity should be delivered as direct current (DC), as Edison believed, or using the alternating current (AC) system invented by Nikola Tesla.

Edison's marketing men electrocuted animals in public to demonstrate the supposed dangers of AC, and attempted to introduce the word "Westinghoused", meaning "electrocuted", into popular parlance (without success). When Edison was asked to supply an electric chair for the execution of criminals, he agreed—on condition that it should be powered by alternating current. Ultimately, however, Edison failed to establish DC as the standard, because (as he must himself have known) AC is a more efficient way of transmitting power over long distances—and it is AC that is used today.

In other words, Edison did not invent the generator, the bulb, or the AC system—in fact, practically the only aspect of modern electrical apparatus that can be traced back to him is the electricity meter (he always had his priorities right). But he it was who put the pieces of the puzzle together and made it all work. Edison is rightly remembered as the man who pioneered the widespread domestic use of electricity.

By the time of his death in 1931, Edison had been described by a German historian, Emil Ludwig, as "the greatest living benefactor of mankind". Ludwig declared that when Edison "snatched up the spark of Prometheus in his little pear-shaped glass bulb, it meant that fire had been discovered for the second time, that mankind had been delivered again from the curse of night."

All hype aside, electrification certainly proved to be a good idea. Although it was initially seen just as a means of domestic illumination, electricity was soon being used to power phonographs, stoves, bells, heaters and elevators.

By the 1890s it was clear that domestic electricity was here to stay, and would be an indispensable part of 20th-century life. One attempt to imagine the electrically powered future, published in *Answers* magazine in 1893, under the title "The Empty House of 1993", describes a house

fitted throughout with electricity, electric stoves in every room, improved electric cooking range in kitchen. All the stoves can be lighted by pressing a button at the bedside. Doors and windows fitted with electric fastenings, phonographs for communicated messages fixed to front and back doors.

Today, estate agents do not even bother to mention the presence of electric lighting in every room; in the developed world at least, electricity is now so ubiquitous that most people notice it only when it fails to work. When a technology becomes invisible in this way, it is a sign that it has matured. Modern visions of homes of the future imagine wall-to-wall computers and exotic communications devices. Perhaps in another 100 years' time, they too will have matured, and become as much a part of the fabric of everyday life as electricity.

Millennium issue

The forgotten father figure

Dec 23rd 1999

From The Economist print edition

IT SEEMS curious that Charles Babbage is remembered today as the grandfather of computing, for Babbage never completed a single one of his clunky mechanical calculating machines, and his work was largely forgotten after his death in 1871. It was only with the construction of the first electronic computers in the 1940s, by people who were unaware of Babbage's work, that the ground-breaking nature of that work became apparent. Had Babbage never lived, in other words, the rise of the computer would have happened anyway. That is because today's computers owe their ancestry not to Babbage but to the work of another 19th-century pioneer, Hermann Hollerith.

1884

In contrast to Babbage, who wanted to automate the fiddly business of mathematical calculation, Hollerith was interested in the less esoteric (but equally tedious) field of data processing. Babbage intended his elaborate "calculating engines" to be used by scientists, in much the way that specialist supercomputers are today. The particular application he had in mind—the "killer app"—was the production of error-free mathematical and astronomical tables. Hollerith, on the other hand, made his name building machines to handle a gargantuan data-processing task: the analysis of the results of the United States' census.



Historic high-tech

When the first American census took place in 1790, tabulating the data it collected took nine months. As the country's population grew larger, however, and the number of questions asked in each census increased, a problem of delay gradually emerged. The results of the 1880 census took seven years to compile—making them out of date by the time they were published.

This was unsatisfactory because, for example, seats in the House of Representatives were (and are) assigned according to census data. It became apparent that a new way would have to be found to compile the results of the 1890 census, in order to keep up with rapid demographic changes. Indeed, without a new approach the 1900 census would already have been under way by the time the 1890 results became available.

Hollerith, a former employee of the Census Bureau, had the idea of building a tabulating machine. His first design, patented in 1884, used a long strip of paper into which holes were punched to represent information. The record for each person was to be punched across the strip, which would then be run through the machine. Electrical contacts made through the holes in the strip would drive electro-mechanical counters. In this way the number of records matching particular criteria could be counted.

Before long, Hollerith improved this scheme, by using combinations of holes to represent more complex pieces of information. At the same time, he switched from a paper strip to punched cards. (Making the cards the same size as dollar bills meant that existing storage cabinets could be used.) By clever wiring of the tabulating machine, it was possible to count the number of cards with particular combinations of attributes.

Hollerith also invented a sorting machine, to facilitate the tabulation of subsets of the population. When a card was inserted into the tabulating machine, the counters would be updated accordingly, and the appropriate drawer in the sorting machine would open.

When it came to choosing a tabulating machine for the 1890 census, Hollerith's design was one of three contenders. The other two machines used colour-coded slips of paper and chips of wood to represent information. In a competition between them it took 72 hours to record all the data on to Hollerith's punched cards, which was not vastly faster than the 144 hours and 100 hours taken by the other two machines.

The real advantage of Hollerith's system became clear, however, when it came to manipulating the stored data and compiling the results. Hollerith's machine took less than six hours; the other machines took 55 and 44 hours respectively. His design was chosen, and his machines compiled the results of the 1890 census in a mere six weeks, at a saving to the Census Bureau of $5m in staff costs—ten times more than expected.

This success enabled Hollerith to expand his Tabulating Machine Company into overseas markets. In 1911, the company merged with two others, and in 1924 the new firm changed its name to International Business Machines—now better known as IBM. There is, in other words, a direct line from Hollerith's tabulating machines to mainframe computers and, in 1981, to the first IBM PC.

It is ironic that today's computer industry has its origins in a data-processing project carried out in 1890 that was completed on time and under budget. Modern computerisation projects, in contrast, tend to have far more in common with Babbage's ill-fated attempt to build a mechanical computer, which cost a fortune and was eventually abandoned. Perhaps the fact that Hollerith is forgotten, while Babbage is remembered, should not be so surprising after all.

Millennium issue: Oral contraceptives

The liberator

Dec 23rd 1999

From The Economist print edition

1956

WHEN asked the historical significance of the French Revolution, Zhou Enlai, then the Chinese premier, is supposed to have replied, “It is too early to tell.” Perhaps that is the best response to the question of which of the 20th-century’s numerous inventions belong on a list of the millennium’s most important. Only time will tell.

In any case, nothing comes of nothing. Many of the innovations of the past 100 years have their antecedents or their inspiration in earlier devices. Heavier-than-air flight—a child of the century’s first decade, to be sure—is, nevertheless, flight. The Montgolfier brothers anticipated the Wright brothers by 120 years. And the engines that power aircraft and most other modern means of transport ultimately owe their births either to the steam engine or to a reversal of the electrical generator (put current in and you get movement out, instead of the other way round). Computers trace their roots to Hollerith and his census cards. Television is little more than a transient, moving form of photography. Even the atomic bomb can track its inspiration back to gunpowder.

But there is, perhaps, one invention that historians a thousand years in the future will look back on and say, “That defined the 20th century.” It is also one that a time-traveller from 1000 would find breathtaking—particularly if she were a woman. That invention is the contraceptive pill.

The relationship of science to technology is as often “take” as “give”. Invention is frequently serendipitous. Science then uses those inventions to develop itself, and to explain why they worked in the first place. Only when it is reasonably sure of its ground are the fruits of its discoveries fed back to produce truly “scientific” technologies.

Earlier centuries saw that happen with physics and chemistry. The 20th century has witnessed it in biology. And the turning point—where science thought it understood a biological process well enough to engineer it—was probably the creation of the Pill.

Until the Pill, drugs were developed on a “suck it and see” principle. Either it was not known how they worked, or their mode of action was elucidated after their discovery. But the Pill was designed to mimic an enzyme—progesterone—that was already well known. The problem, to make a progesterone-like molecule that would fool the reproductive system while escaping the attentions of destructive enzymes in the liver, was solved by Carl Djerassi. The first trial of the resulting drug was carried out in 1956 by Gregory Pincus.

Historians of the Zhou persuasion will argue endlessly about how important the Pill was to the recruitment of women as equal members of society. Certainly, much of the legal apparatus of equality was in place (at least in the West) before the Pill was invented. But there is a difference between a right and a remedy. And before the 1950s the unpredictability of the arrival of children meant that the rights of many women were more theoretical than actual. The Pill really did give a woman the right to choose. And though the consequences of that choice are still working themselves out, as both men and women adjust to the new reality, one difference between the passing millennium and those to come is clear: women have taken a giant step towards their rightful position of equal partnership with men. Technology really is liberation.

Millennium issue

The tale of Murasaki Shikibu

Dec 23rd 1999

From The Economist print edition

The modern novel was born at the imperial court of Japan

1001–19

ALMOST exactly 1,000 years ago, a young woman in a small town in Japan began to write the story of an imagined prince who had just about everything—brains, looks, charm, artistic talent and the love of well-born ladies. He was Genji, "the shining one", so dear to his father, the emperor, that the latter reduced his rank to that of a commoner, to spare him the malice at court.



Born in the first chapter of "The Tale of Genji", the prince reinvents himself as the most powerful commoner in the kingdom. When last seen, by now aged 52, he is planning to seclude himself in a mountain temple. Further chapters concern his supposed son Kaoru, troubled to find out that his adored father is not his natural father at all.

Today, "The Tale of Genji" is acknowledged as the world's first modern novel, and its writer, Murasaki Shikibu, not just as a pioneer but as one of enormous talent, not least in her use of irony. This long book is peopled by dozens of well-wrought characters, sophisticated figures in an aristocratic society that values celebrity and ambition. It has often been compared to Proust's "Remembrance of Things Past". Both works "explore memory and passing time. The psychology of the characters is complex; the central drama is their internal conflict," says Haruo Shirane, professor of Japanese literature at Columbia University, in New York.

Murasaki's characters and their setting reflect the reality around her. Genji's seduction of court women is also political opportunism. He fathers at least one emperor and an empress. In the late Heian era (893-1185), when the book is set, the ruling Fujiwara clan of upper-class commoners (to which Murasaki belonged) would send their daughters to court at Kyoto, hoping that one would give birth to a crown prince and ensure their control of the imperial power.

Little is certain about Murasaki Shikibu. The name itself is a pen-name. She may have lived from around 975 to 1025. Until her marriage she perhaps lived in the province on the Japan Sea where her bureaucrat father had been appointed governor. She married probably in 998; had a daughter; was widowed in about 1001; and

probably then began "Genji". She kept a diary, which reports her arrival at court—thanks to both her connections and her talent—in 1005 or 1006.

There, in Kyoto, an attendant to Empress Akiko, she was Lady Murasaki, "pretty yet shy, unsociable, fond of old tales", as her diary puts it. Everyone wanted to read the story of Genji. The young empress was the first to see the work-in-progress, which Murasaki did not complete until about 1019.

She wrote the novel in her own hand; court amanuenses copied it as she went along. Ladies-in-waiting and courtiers sought it out, even stealing unrevised pages from her room. Although Murasaki read Chinese, and indeed instructed Akiko in its ideograms, she wrote her book in the Japanese phonetic *kana* syllabary. That was one reason for its appeal. Educated men studied Chinese; few women did.

"The Tale of Genji" soon became essential reading for the upper class. In the late 12th century, digests of it were required reading for poets. At last, in the 17th century, when the printing press came to Japan, the book was available to the masses. Murasaki's style became the Japanese model for writing, if not for morality: her hero's active sex life, and the luxury of the ancient court, as she represents it, were deplored as decadent by Japanese purists into the 20th century.

In Japan today, "The Tale of Genji" is as natural to the culture as Mount Fuji and the cherry-blossom season. High schools teach sections of the ancient text, in its classical Japanese, to prepare pupils for university entrance. Novelists challenge themselves by writing modern translations. The most recent, by a Buddhist nun, 76-year-old Jakucho Setouchi, came out in ten volumes, the final one in 1998. Between them, they have sold over 2m copies. Other well-read modern versions by Akiko Yosano, a poet, and by two novelists, Junichiro Tanizaki and Fumiko Enchi (who supposedly lost her eyesight working on "Genji"), also are in print.

Spin-offs from the book, serious and less so, are legion. A CD-ROM about it has sold 15,000 copies. Internet websites abound, most created by academics. Several films have been drawn from it. The late 1980s brought a successful pop group calling themselves Hikaru Genji—Shining Genji. An animated Genji film came out in 1987, following a television series. A Tale of Genji museum opened in Uji, near Kyoto, in 1998. In its first eight months it had 120,000 visitors, mostly middle-aged or elderly women. This year, the last part of Saeko Ichinohe's three-part dance "The Tale of Genji" was premiered at New York's Lincoln Centre.

Modern translations of the novel have been published in Chinese, German, French, Italian and English. Arthur Waley, a British scholar also known for his translations of Chinese literature, published his version from 1925 to 1933. It was his limpid prose that brought "Genji" to western readers, as they re-examined Japanese culture after the second world war. An American author-translator, Edward Seidensticker, produced a fuller translation in 1976, using a matter-of-fact voice akin to Murasaki's own. His is the preferred version in the United States today.

Millennium issue

Villon lives

Dec 23rd 1999

From The Economist print edition

1431–??

AMID too much courtly verse-turning of the 14th-16th centuries, the unattainable dames, later the sportive nymphs and shepherds, one voice speaks to the modern ear like clanging metal amid tinsel:

Surname? Villon, just my luck.
Born? In Paris, near Pontoise.
You wonder what my backside weighs?
Ask my neck when they string me up.

A graduate, widely read, client of the princely poet Charles d'Orléans, François Villon, born in 1431, could turn elegant trivia with the best: his over-famous *Où sont les neiges d'antan?*—Where are the snows of yesteryear?—is really not much more than that. But his true life and voice was that of the Paris underworld: his women are mostly whores, his friends fellow drinkers, layabouts and thieves, his enemies the forces of the law which before he was 25 had jailed him for a brawl that ended with one of the brawlers dead.

One poem on its own assures his immortality: his "Ballad of the Hanged Men", an epitaph for himself, here freely translated by Stephen Sisson.

Brothers, we were men like you;
they hanged us, don't you hang us too.
Give us a blessing—when God's test
is yours to answer, you'll be blessed.
Here we dangle, five or six,
the flesh we fattened's turned to rot,
meat for maggots, our bones are sticks—
oh, brothers, as you pass don't mock,
but pray for us, when Judgment tolls,
may God have mercy on our souls.

We call you 'brothers', don't slip by
looking askant—you too must die.
You in your beds, we on the rope—
you have the wit, give us the hope.
So pray to Jesus, Mary's son,
Mary, Mother of God, for grace;
we'd mothers too, and now we're done,
don't cry us down, but plead our case.
We're dead, but as hell's lightning spins,
may God not damn us for our sins.

The birds have hollowed out our eyes,
plucked out our beards and eyebrows, flies

swarm in our throats. Rain-scoured, our skin
sun-dried and blackened, here we swing.
And swing, and swing, now left, now right,
forward and back, as each wind blows;
no rest for us by day or night,
dartboards for the beaks of crows.
Brothers, don't join our brotherhood,
but beg God's grace for those who did.

Prince Jesus, Lord of all, that day
don't give us up to Satan's sway,
to squeeze our souls for what he's due.
Nor, brothers, jeer, but kneel and pray
to God to spare us, men like you.

And was Villon hanged? Not this time. The only real source for his biographers, his long police record, unearthed by scholars, shows him instead banished from Paris, in 1463. And then? We don't know: he vanishes from history. And into it: the first edition of his verse came out in 1489, some 20 more had been published by 1600.





First night at the Globe

Dec 23rd 1999

From The Economist print edition

1599

THE eight-year-old English boy wrote home from his boarding school. He'd heard a brilliant piece of music by a man called, well, he wasn't sure how to spell it, but something like m-o-z-a-r-t. Could he—or even a little Austrian, or Russian, or Indonesian—have written that he'd seen a play by someone called s-h-a-k-e-s-p-e-a-r-e?

It's impossible now to unknow Shakespeare. The words are quotations, the plays no longer plays but interpretations of plays. The playwright himself has become a sort of one-man band, with a cacophony of instruments strapped on all over him: academia on his back, a drum thumping with conferences and careers; the theatre on his shoulders, bristling with logos and sponsorship and more careers; business bursting from his pockets, spilling heritage enterprises, mugs and T-shirts, the whole monstrous spectacle shimmering with 400 years of reputation.

Shakespeare was no sooner dead than his fellow playwright Ben Jonson hailed him as "not of an age, but for all time". In the 18th century he became the National Poet; in the 19th, a secular saint; in the 20th, political radicals and liberal humanists alike have claimed him for themselves. Continental Europe and Russia joined in, from the late 18th century onwards. True, Voltaire had called Shakespeare a barbarian for neglecting the rules of neo-classical dramaturgy upheld by Corneille and Racine (whose plays, besides, were performed across Europe, as Shakespeare's, then, were not). But it was just his roughness, as it was deemed, that excited the Romantics' imagination, seeming to capture the very spirit of rebellion.

Yet the man (given that he wasn't really the Earl of Oxford, or Francis Bacon, or, as an English wit once conclusively proved, Queen Victoria) was a man of the theatre, and of his time and place. How did his plays and the theatre seem there and then? Perhaps because of the centuries' accretions round his name, people have long desired to go back to the beginning and look.

In the quest for that past, the Globe theatre, on the bank of London's Thames, casts a potent spell. Perhaps within that magic circle, that wooden O, Shakespeare's ghost can be conjured up? One scholar reckons that over the past 200 years there have been at least 20 reconstructions of open-air Elizabethan theatres. Certainly the most recent, the new Globe, sited almost where the old one was, brings a catch at the heart. We know the structure is only a well-informed guess, but it has the feeling of authenticity.

And the audience? We can imagine them, paying their pennies to stand or sit in different parts of the house; hissing or clapping, heckling or laughing, eating and smoking. We can imagine the actors too, standing on that "long, rude tongue" of a stage, as someone once called it, thrust out into the middle of the audience, terrifyingly but exhilaratingly exposed. At the new Globe, we can witness it. Yet we cannot be with Shakespeare's audience or actors. We bring our 20th-century minds, watching ourselves having an Elizabethan experience.

A surer way, paradoxically, may be to recognise the very distance between ourselves and him. In an intriguing new book, "Shakespeare's Mystery Play; the Opening of the Globe Theatre 1599", Steve Sohmer follows a trail that takes him, he believes, to the very opening play and day of the newly built theatre: "Julius Caesar", on June 12th 1599. He does it by an arcane route: the 16th-century controversy over the Julian and the Gregorian calendars, astronomy, astrology, Biblical scholarship and classical allusion.

That June 12th, it seems, was a loaded date: June 12th it was, according to the faulty Julian calendar then still used in England, but the summer solstice, according to the sun. Thereby hangs an elaborate tale, in a world where a date was not just a date, but a rendezvous with the planets; where the planets ordered the pattern of the Christian year; where that year, with its succession of holy days and scriptural texts, was a form of divine revelation; and where Christian revelation was made manifest anywhere in history—for example, in the pre-Christian history of "Julius Caesar".

There are times when Shakespeare emerges from all this more ingenious and recondite than one can quite believe. Yet Mr Sohmer persuasively evokes an intellectual atmosphere where history is criss-crossed with anachronism, antiquity and Christianity seeming almost to occupy the same time, like the togas and doublets side by side in a contemporary illustration of "Titus Andronicus", or the mixture of thatch and *trompe l'oeil* marbling in the Globe itself. The many references in "Julius Caesar" to dates and hours and calendars begin to resonate, as it were, to the church bells of Southwark clanging through those afternoon performances 400 years ago. And even if the Globe did not open on June 12th, nor with "Julius Caesar", the first solid information we have of a performance there brings us pretty close. Thomas Platter, a Swiss visitor to London in 1599, noted that

on September 21st after lunch, about two o'clock, I and my party crossed the water and there in the house with the thatched roof witnessed an excellent performance of the tragedy of the first Emperor Julius Caesar.





Millennium issue: Western classical music

The Eroica

Dec 23rd 1999

From The Economist print edition

1804

THEY came for a concert. They witnessed a revolution. They could not have foreseen it, or have realised it even afterwards, those elegant guests who assembled at Prince Lobkowitz's Vienna palace on a bitter December night in 1804 for the premiere of a new symphony by the wild and woolly Ludwig van Beethoven. Of course, many in the nervously expectant throng must have muttered, the man was a peerless pianist; but as a composer he sadly lacked the sense of proportion of "papa" Joseph Haydn or the late lamented Wolfgang Amadeus Mozart. Still, perhaps the 34-year-old iconoclast was starting to mellow at last.

He was not. Wham, wham. With the two opening chords of his symphony number three in E flat major, the "Eroica", Beethoven thrust aside the old classical order, with its precise rules, and opened the door to the glorious excess of the romantic era. If ever there was a moment that changed music, at least western music, then this was it; more than the first hearing of Wagner's "Tristan und Isolde" in 1865, more than the notorious premiere of Stravinsky's "Sacre du Printemps" in 1913. It was Beethoven, and above all the "Eroica", that made the rest possible.

That may seem too tall a claim. After all, while the sound, fury and inordinate length of the "Eroica" were shockingly new, Beethoven, by and large, still stuck to established symphonic form. And Mozart had been no mere spinner of elegant notes, no practitioner of art for art's sake; he often cheerfully flouted classical convention. True, but with Beethoven as never before individual human aspirations, fears and passion are central to the music, threatening to overwhelm its structure, albeit never (well, hardly ever) doing so. As George Bernard Shaw put it, in his single-minded determination to express his own moods Beethoven "anticipated with revolutionary courage and frankness all the moods of the rising generations of the 19th century." And, one might add, those of the dying 20th century too.

How did it happen, the "Eroica", that bolt from the blue? Beethoven's first two symphonies have their oddities as well as beauties, but nothing that really hints at the monster coming next. Did Beethoven's increasing involvement with the stage, including his music for the ballet "Prometheus", incline him more to building drama into "pure" music? Did Napoleon provide the stimulus, as numberless accounts have since claimed? Beethoven initially admired the Frenchman as (like himself) a democratic revolutionary, and on the title page of the "Eroica" wrote "Grand symphony entitled Bonaparte". He tore the dedication out after Napoleon proclaimed himself emperor. But the connection can be carried too far. "No. No. Is-a not Napoleon," screamed an exasperated Toscanini, rehearsing the first movement; "Is-a *allegro con brio*." Does the increasing deafness that afflicted Beethoven from 1802 offer the key? We know he came close to suicide; he wrote later that "nothing but my art held my hand." It was the moment, surely, to compose something very special. Is the hero of the "Eroica" not Napoleon but Beethoven himself? Both men, maybe? Or all who triumph over adversity?

Perhaps all these elements combined to produce the critical mass from which the symphony erupted. We cannot know. We can only hear the results.





Millennium issue: Chess

The Automaton

Dec 23rd 1999

From The Economist print edition

DID the game ever take place? Let us suppose so. The year is 1809 and Napoleon is on campaign—not at war, but chess. And his adversary is not a man but a machine.

1809?

Napoleon attacks early, rushing out his queen. The Automaton defends easily, threatening to capture it. Already Napoleon is in retreat. A bad loser at anything, he is visibly annoyed. He tries to confuse the machine with an illegal move. In one version, he even covers its head with a shawl, then places a huge magnet on the board. In vain: the Automaton wins. Napoleon storms out.

The Automaton, or "the Turk", from its likeness to a figure dressed as such, certainly did exist. Built by a Hungarian baron, Wolfgang von Kempelen, in 1769 it was presented to Maria Theresa at the court of Vienna, where it challenged all comers. Here was the first chess computer. Not quite. Even von Kempelen admitted it relied on a few tricks. For a start, there was space for a good chess player to be hidden inside.

Still, the machine was toured round Europe, and drew crowds after von Kempelen's death in 1804. An English scholar, Robert Willis, studied its exhibitions in London, and in 1820 published a paper accurately describing its workings. The noisy gear-wheels were there just to conceal the sound of the man inside. Willis established a principle that was to hold good for a century and a half:

It cannot usurp and exercise the faculties of the human mind, it cannot vary its operations so as to meet the ever-varying circumstances of a game of chess. This is the province of the intellect alone.

When the machine went to America in the 1830s, Edgar Allan Poe won praise for speculating how it really worked, his analysis shamelessly lifted from Willis's pamphlet. By then, it was easy to mock at a public naive enough to be taken in. The limitations of machines were now widely understood. A reasoning chess automaton? Absurd, without a human at the controls.

For a century, yes indeed. Then Alan Turing, a British cryptologist, began work on a primitive chess computer. Yet the idea of one beating a serious player still seemed a pipe-dream. Even in the early 1980s, when chess computers first reached the shops, they played so poorly that the chess world laughed off predictions that they would one day compete at master level.

Ridiculed, the geeks went back to their programming. The machines were taught to be less greedy. Early ones could not resist accepting a sacrifice (a piece offered to win some greater gain), even if that meant instant disaster. Now they learned to abstain. They learned to handle strategic, rather than purely tactical, concepts. Meanwhile, leaps in processing power enabled them to number-crunch as never before. By the early 1990s even a basic chess computer could spot a checkmate three moves ahead faster than any human. In "lightning" chess, played at speed, machines became invincible.

February 10th 1996 was a fateful day for the now worldwide game invented in India and brought to the West via Persia and the Arabs a bit before our millennium began. Its great names surely turned in their graves: 16th-century Ruy Lopez in Spain (there is still a chess opening named after him); Philidor, two centuries later, the great French analyst; Staunton, the Victorian Englishman who gave his name to the standard design of

chess pieces; Morphy, the American, who taught the masters not to rush into the attack as Napoleon had; theorists such as Steinitz or the Russians Nimzowitch, Alekhine and Botvinnik, who brought chess to the complexity it has now. Well such men might turn. On that day in 1996, Garry Kasparov, another Russian, the world champion, lost a normal game (and in 1997 a six-game match) to Deep Blue, an IBM-sponsored machine.

In 1999, at a tournament in Germany, an unknown amateur won game after game, even against masters. Spectators marvelled. Then he was rumbled: he was playing moves suggested by a computer, via an ear-piece. Von Kempelen's trick, in reverse: the Automaton and the geeks had had the last laugh.

Millennium issue

A portrait of the artist

Dec 23rd 1999

From The Economist print edition

ONCE upon a time— for the first 450 years or so of our millennium—the western artist was essentially an illustrator, often anonymous, and mainly of scriptural or saintly texts (Serbian Madonna, 1350). Then, as ideas expanded, so did his scope. But for 350-odd years, he remained, mostly a client of wealthy patrons (Botticelli's Flora, 1478).

Only since about 1800 has he been freed to become what he always longed to be: a self-expressing Ego (Juan Gris's Seated woman, 1915-20). By then—mercifully, in some fogeys' view—science was getting ready to invent the camera.

His notion (artists were indeed nearly all men) of the ideal woman has also changed a bit, hasn't it? (Philippe Halsman's Marilyn Monroe, 1959).





Millennium issue: The cinema

Hollywood premieres

Dec 23rd 1999

From The Economist print edition

1907

AND to think it might have been Brighton. Movies and Hollywood have become so synonymous that it is tempting to believe it had to be so. No. Well before outsiders from America's east coast lit upon Hollywood as a suitable base, a film industry was flourishing in Britain, in Sussex by the sea.

James Williamson set it up, churning out jolly little crowd-pleasers with such titles as "Two Naughty Boys Upsetting the Spoons". In 1900, two rivals, George Smith and Charles Urban, inventor of a colour system, Kinemacolor, joined forces and also set up in Brighton. Till not long ago, one could still see the warehouse, its roof emblazoned with the word Kinemacolor, where they filmed such epics as "Mother Goose Nursery Rhymes".

But the Brighton school lacked stamina. By 1909, it was gone. Stamina its American rivals had aplenty. But Hollywood was not their first choice. The industry was born in the east, where companies such as Vitagraph set up soon after 1900. Another such, American Mutoscope and Biograph, developed a cine-camera, to the grief of Thomas Edison, who had patented one. Courts ruled that no patent had been infringed. So Edison linked with Biograph and eight other companies, which pooled their patents, setting up the Motion Picture Patents Company in 1908. Each member had a licence to make films, using any member's equipment. Exhibitors paid $2 a week to rent films and use projectors from members. But if they showed films made by outsiders, the projectors were repossessed and the supply of films cut off. In plain English, a suppliers' cartel. It became a worse one when Eastman Kodak, the biggest supplier of film stock, agreed to sell only to cartel members. Many competitors were driven out of business. But the strongest survived, including Carl Laemmle and William Fox, founders of what were to become Universal and 20th Century Fox.

New York, where many of the trust's foes operated, was riskily near it. Canada was far to the north, Mexico too far south. Searching for a safer bolt-hole, they came upon a suburb of Los Angeles: Hollywood. It offered a stable climate, 350 sunny days a year, and had only a few hundred inhabitants. The movie makers could settle there and, they hoped, hardly be noticed. If lookouts hollered "the trust is coming", even the cars of the time could manage a dash to the Mexican border. The Selig company moved west from Chicago in 1907, Mack Sennett's Keystone company in 1911. Others followed. By 1918, four-fifths of the film-making capacity of the world had relocated to Hollywood.

Angelenos disapproved, seeing their suburb infected by these new vulgarians. Locals took steps to make movie folk feel as unwanted as Jews (which many were) and negroes. They were excluded from country clubs and as late as 1918 were refused tenancies in the ritzy Garden Court Apartments. But in the end snobbery yielded to the true American value, success. Success? It's the box-office gross, stupid. The mogul David O. Selznick is a Hollywood legend because his "Gone with the Wind" was, for a quarter of a century, the highest-grossing film ever made. World-beaters since then have included "Jaws", "Star Wars", "ET" and the current champ, "Titanic". Hollywood knows a good movie when it sees one: one that may make a star, but must make somebody's fortune.

Hollywood in less than a century has grown from a toffee-nosed village to a town as famous as New York, Rome or Paris. And physically, of course, it has changed beyond recognition: a century ago, you would walk through orange groves to the village store.Yet in a way it is still a village—small-minded, with narrow boundaries, just a little bit of LA. For all who live and work in it, there is one topic of conversation—movies: how much they have

made, who concerned is knifing or sleeping with whom, who is “attached” to which project. Those who have been successful often try to get away: to work there, but live somewhere else. Yet it is still the one place in the world to which almost everyone who is anyone in show-business (and plenty who aren’t) eventually gravitates.



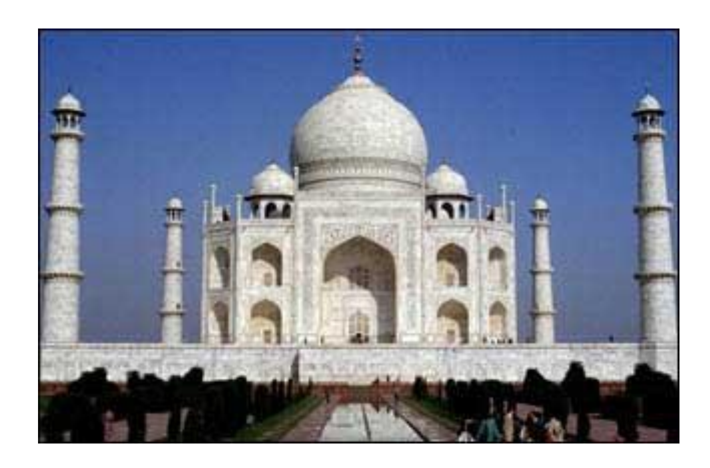


Millennium issue

1,000 years of architecture

Dec 23rd 1999

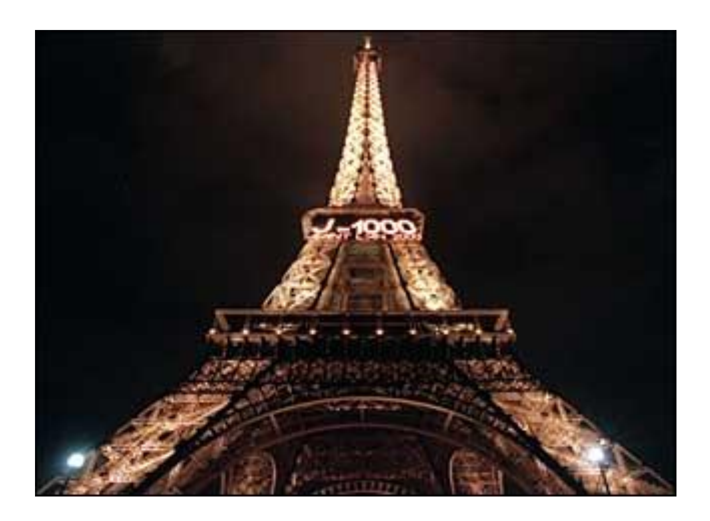
From The Economist print edition



1643

"Form follows function," said Louis Sullivan, an American skyscraper architect, in 1896. Not always. But look above: love defies death.

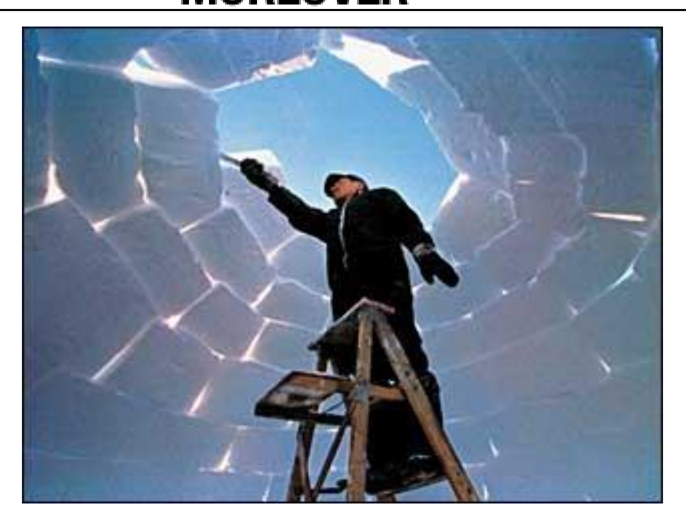
And below: the triumph of engineering.



1889

And below: the igloo, a design (an outsize example, this) unaltered in 1,000 years, because it works.

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Millennium issue

God

Dec 23rd 1999

From The Economist print edition

After a lengthy career, the Almighty recently passed into history. Or did he?

WHEN your friends start looking for proofs of your existence, you're heading for trouble. That was God's situation as the millennium got into its stride.

Few ordinary folk, though they had different names for him, doubted the reality of God. He was up there somewhere (up, not down; in his long career, no one ever located him on the seabed), always had been, always would be. Yet not quite so far up, in the churches and monasteries of Europe, many of its cleverest men would soon be racking their brains for ways of proving it.

Anselm, for instance, and others centuries later, such as Descartes, reckoned if you could think of God, then there must be a God to think of. Thomas Aquinas saw everything in motion, so there must be someone to give the first push. Others felt that a universe so elegantly designed as ours plainly must have a designer. And so on, and ingeniously on.

Yet why bother with proof, if everyone knew it anyway? One, because great brains are like that; two, because not everyone did. Out there were the gentiles, Saracens and such. But did not they too say, "There is no God but God"? Yes, but they didn't mean what good Christians meant. They must be taught better. And there God's troubles began.

They were largely his own fault. Like many great personalities, he had countless admirers who detested each other—and he let them do so. For one of infinite knowledge, he was strangely careless how he spread what bits of it to whom. To some he dictated the Bible; to Muhammad the Koran. He was much concerned with the diet of Jews. He let Hindus paint him as what, to others, looked like a blue-faced flute-player with an interest in dairy-farming. Each set of believers had its version of what he was like and what he had said. No wonder cynics began to hint that, if believers differed so widely, belief might be a mistake.

He let Hindus paint him as what, to others, looked like a blue-faced flute-player with an interest in dairy-farming

The believers then made things worse. For soon it was not sets but sub-sets. Christians nationalised God, as Jews had long since, like some coal mine. He's on our side, the English told the French. No, ours, Joan of Arc hit back. Next, the Reformers privatised him: *unser Gott*, fine, yet not the king's or the church's, but each man's own. From this umpteen versions of what "he" might amount to, or think, were apt to spring, and did. Close kin could disagree. As late as 1829, a bishop warned Britain's House of Lords of divine retribution if it granted civic rights to Jews; happily, their lordships, aware that stupidity thrived in God's house as in their own, took the risk. In the 1840s American Methodism split, north against south, arguing whether his word condemned slavery or justified it.

Nor did the rivals seem even to believe their own versions. The Christians turned not cheeks but swords against Muslims, Jews and each other. Muslims, while averring that "in religion there is no compulsion", did the like to them and to Hindus, and put to death apostates from Islam. For centuries, such rivalries led to torrents of blood. Was this a good God at work? *Tantum religio potuit suadere malorum*, the Roman poet Lucretius had written: that's where superstition leads. It was no disproof of clerical logic, but it was a reasonable point.

And in time reason began to take a hand. God, OK, but less mumbo-jumbo, said a platoon of English "deists" in the early 18th century; we can reach him without revelation, let alone incense. This was a risky step, as French and German thinkers were soon to prove. If human reason was so powerful, did man need God? No, said Enlightened men like Diderot (to be silenced, but not convinced, when the mathematician Euler told him "$a + b^n$ over $n = x$, *donc Dieu existe*"). The French revolution buried God, albeit Napoleon soon dug him out.

Darwin did not help, blowing apart the first book of the Bible. Nor did critical 19th-century German micro-examination of what was left. Still less did men like Marx, who saw the close links between the ruling class and the ruling churches, and was eager to blow up both; come the 20th century, the Soviet Union did so, literally. Religion was the opium of the people, give them the adrenalin of communism instead. God was dead, as Nietzsche had announced; and even if the superman Nietzsche envisaged to replace him somehow never got born, communist man could do it.

Darwin did not help, blowing apart the first book of the Bible

Trouble was, communist man didn't; the people did not agree; and the corpse just wouldn't lie down. He popped up in the oddest places. "You don't find many atheists in a landing-craft heading for Normandy," recorded a padre aboard one such in June 1944; even though the Almighty was about to let many of their joint flock be turned into fish-food. A French journalist, no less, was ready in the 1960s with the best possible evidence, if it was true: a book entitled "God exists, I have met him". (Or could it have been "her", as even the current pope was heard to hint recently?)

And this was in the cynical, questioning, anti-authoritarian West. Ever fewer westerners share the church's—or the synagogue's—beliefs, and far fewer still attend their services. Yet outside the rarefied world of thinkers, remarkably few deny the possibility of a supreme being; less than 10% of Americans. In Muslim and Hindu societies, the thought is barely heard.

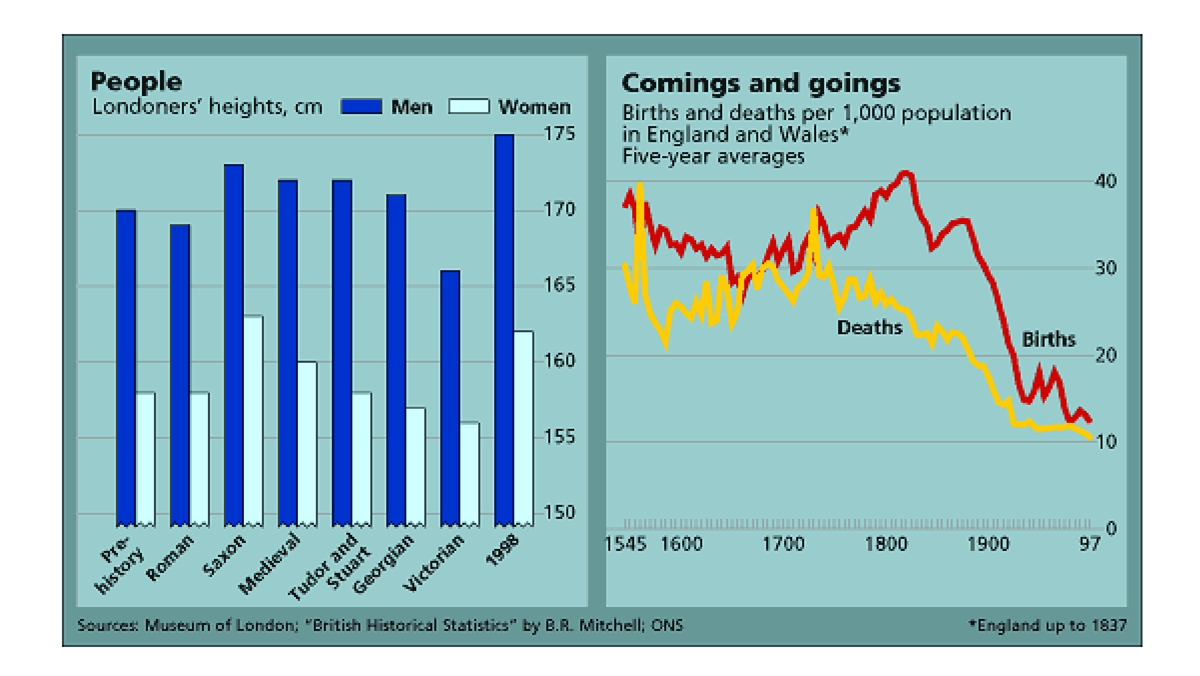
The test will come on Judgment Day, when man, we are told, will meet his maker. Or will it be God meeting his?

PEOPLE

Dec 23rd 1999

From The Economist print edition

London bodies do not take up much more room in graveyards than they did in Saxon times. Modern man is taller than all his ancestors; but, according to measurements of the long bones of long-departed Londoners, the recorded heights of criminals, and measurements made in sundry government surveys, Roman man was only about two centimetres smaller than Georgian man, and actually three centimetres taller than Victorian man. And Queen Victoria was not untypically small: in her era, women stood only 156cm high, compared with today's 162cm. This may have been related to the fact that birth rates reached their highest levels in the early 1800s. They have since fallen by two-thirds. Death rates have gone down almost to single figures per 1,000 population.

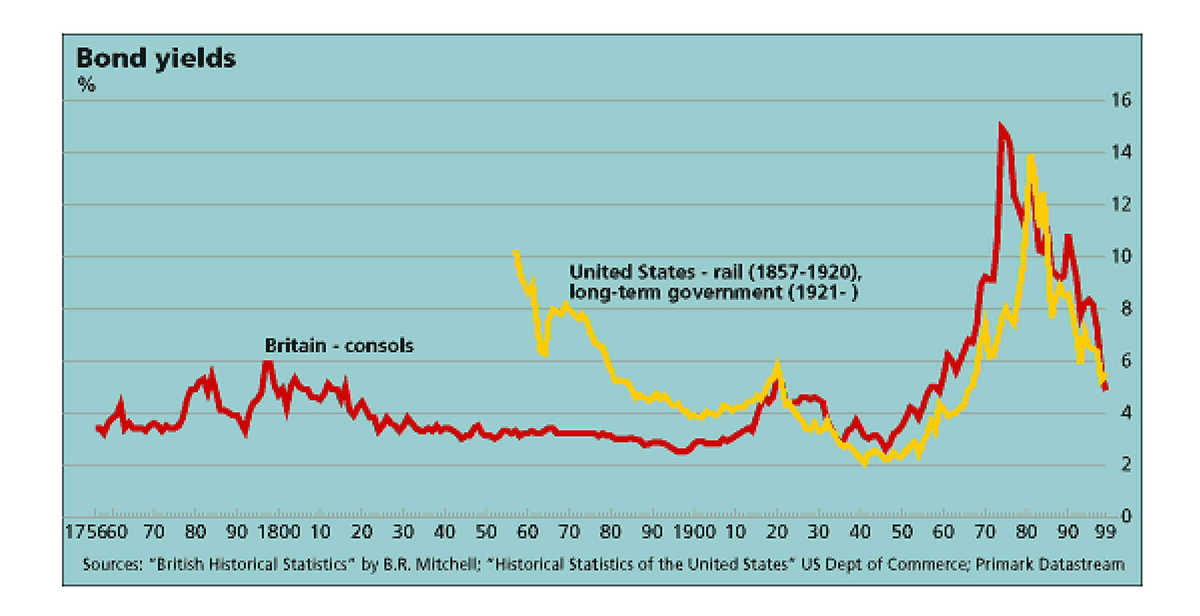


INTEREST RATES

Dec 23rd 1999

From The Economist print edition

Consols, British government debt instruments which have no maturity date, started in Britain when several unlimited issues were consolidated. Yield figures date back to 1756. Early American bonds were issued to finance railway building.



Millennium issue

STOCKMARKETS

Dec 23rd 1999

From The Economist print edition

London share prices fell about 10% between 1693 and 1800, and had made no progress by 1850. But booms and crashes were abundant, notably in 1720 and in 1824, when prices rose 96%, only to lose all that and more by mid-1827.

Share prices, $ terms, % change at annual rate

	1800-50	1850-1900	1900-50	1950-99
United States	0.1	1.8	2.2	9.0
Britain	nil	1.6	-1.1	8.1
Germany	na	0.7*	-3.7	11.9
France	na	nil*	-2.1	9.5
Australia	na	na	3.4	5.5
Canada	na	na	2.6†	6.0

	1905-50†	1950-99
Italy	-5.3	6.0
Japan	-9.9	14.7
South Africa	3.3	4.4
Spain	-4.2	7.2
Sweden	-1.2	10.9
Switzerland	0.8	8.4

*1856-1900. †Starting points between 1905 and 1914.

Bull and bear markets in London, % rise or fall

Period	%	Period	%	Period	%	Period	%
Feb 1693-Oct 1696	-69.6	Oct 1803-Nov 1809	50.7	Sep 1929-Jun 1932	-52.3	May 1972-Dec 1974	-72.9
Oct 1696-Feb 1700	103.6	Sep 1816-Jan 1825	458.2	Jun 1932-Dec 1936	105.2	Dec 1974-May 1976	177.2
Feb 1701-Aug 1703	52.3	Jan 1825-Jun 1827	-69.5	Dec 1936-Jul 1940	-52.3	Oct 1976-May 1979	136.7
Oct 1706-Jun 1720	729.4	Oct 1841-Jun 1845	65.6	Jul 1940-Jun 1947	165.7	Nov 1979-Aug 1981	54.0
Jun 1720-Sept 1722	-82.6	Apr 1854-Feb 1864	63.0	Jun 1952-Jul 1955	96.9	Sep 1981-Jul 1987	365.9
Jan 1762-May 1768	86.3	Nov 1866-Oct 1873	62.0	Feb 1958-Apr 1961	128.1	Nov 1987-Sep 1989	53.9
Oct 1784-Mar 1792	68.0	Apr 1885-Mar 1900	83.2	Nov 1966-Jan 1969	99.8	Aug 1992-Feb 1994	61.5
Jan 1798-Apr 1802	59.9	Oct 1921-Sep 1929	73.2	May 1970-May 1972	99.7	Jun 1994-Jul 1998	97.2

Sources: Global Financial Data; *The Economist*





Millennium issue

EXCHANGE RATES AND TRADE

Dec 23rd 1999

From The Economist print edition

As currencies converge (supposing the yen to drop two noughts) on the dollar, remember November 1923, when $1 bought 4.2 trillion German marks. But note Germany's steady replacement of Britain as Europe's big trading nation.

Currency units* per $			% of country's total trade with main partner							
1929	1949	1999		Earliest available year			1900		1998	
na	na	1.00	**Argentina**	1864	Britain	20	Britain	24	United States	8
0.42	0.90	1.57	**Australia**	1890	Britain	69	Britain	55	Japan	20
0.21	0.35	0.62	**Britain**	1696	United States	9	United States	18	Germany	11
1.01†	1.03	1.48	**Canada**	1872	Britain	50	United States	48	United States	77
na	5.00	8.28	**China**	1868	Britain	36	Hong Kong	43	United States	17
0.26	3.50	6.40	**France**	1845	United States	15	Britain	22	Germany	16
na	4.20	1.91	**Germany**	1880	Britain	14	Britain	15	Britain	10
2.71†	3.31	43.4	**India**	1840	Britain	61	Britain	56	United States	15
0.002‡	0.004	7,195	**Indonesia**	1820	Netherlands	52	Malaya	16	Japan	20
19.1	626	1,890	**Italy**	1861	France	31	Britain	17	Germany	18
2.17	361	103	**Japan**	1873	China	30	United States	23	United States	28
2.49	3.80	2.15	**Netherlands**	1846	Britain	21	Germany	23	Germany	18
na	na	27.0	**Russia**	1845	Britain	39	Germany	60	Germany	8
6.83	11.0	162	**Spain**	1849	Britain	22	Britain	23	France	19
3.73	4.05	8.37	**Sweden**	1832	Germany	17	Britain	38	Germany	14
5.19	4.29	1.56	**Switzerland**	1885	Germany	29	Germany	28	Germany	29
-	-	-	**United States**	1790	Britain	16	Britain	30	Canada	20

Sources: American International Investment Corp; "International Historical Statistics" by B.R. Mitchell; IMF; *The Economist* *1999 denominations †1935 ‡1940





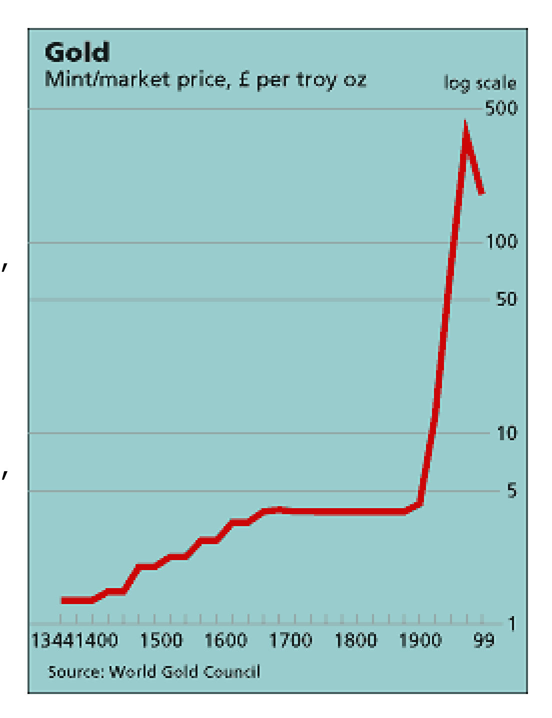
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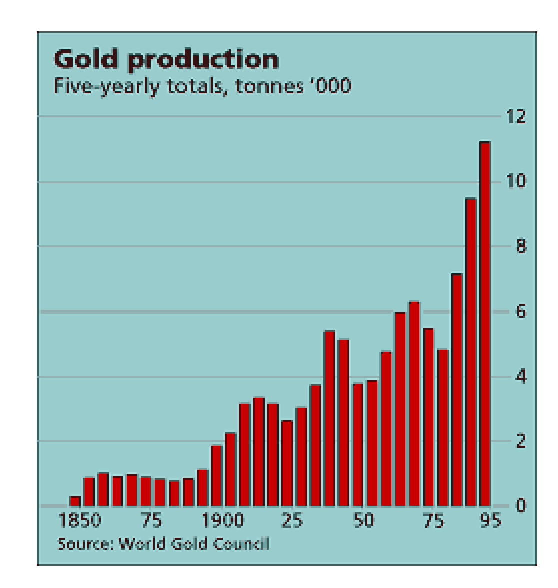
PRECIOUS METAL

Dec 23rd 1999

From The Economist print edition

The sterling price of gold fluctuated relatively little for nearly all of the past 650 years, gently trebling between 1344 and 1915. Prior to 1850 gold was a rare commodity; world gold production totalled only 1,200 tonnes during 1800-50. Gold rushes in America, Australia and South Africa saw total production reach 10,400 tonnes during the next 50 years. As gold coins became more common in most countries, the development of an international gold standard became possible. Prior to that, it had only been in Britain that the "true" gold standard ruled, keeping the price below £4 per troy ounce. The gold standard finally broke down in 1931, and the price of gold rocketed at once to over £6 an ounce. Since then the price of gold has risen about 30-fold, about two-thirds as fast as Britain's retail price index.









Millennium issue

OUTPUT AND POPULATION

Dec 23rd 1999

From The Economist print edition

Output per person probably fell slightly in the first Christian millennium, and rose only slowly for much of the second. Then, wham. Today's North Americans are 57 times better off now than their predecessors in 1000. From a low base, populations have grown fastest in the "western offshoots" (among which, here, we include Japan).

% increase at annual rate

	GDP per person, 1990$, PPP exchange rates				Population			
	1000-1500	1500-1820	1820-1995	World=100, 1995	1000-1500	1500-1820	1820-1997	Number 1997, m
The West	0.09	0.19	1.65	385	0.15	0.27	0.90	767
Western Europe	0.10	0.20	1.51	336	0.18	0.27	0.59	322
North America*	0.00	0.35	1.68	442	0.00	0.41	1.92	319
Japan	0.04	0.08	1.95	380	0.13	0.23	0.80	126
The rest	0.05	0.03	0.92	57	0.08	0.27	0.99	5,050
Other Europe	0.08	0.09	1.07	99	0.16	0.29	0.83	478
Latin America	0.00	0.15	1.16	97	0.08	0.05	1.80	497
China	0.06	0.00	0.85	51	0.11	0.41	0.66	1,230
Other Asia	0.04	0.02	0.92	53	0.06	0.19	1.11	2,104
Africa	0.00	0.00	0.64	24	0.07	0.14	1.33	742
World	0.05	0.07	1.17	100	0.09	0.27	0.98	5,818

Source: Angus Maddison, University of Groningen

*Includes Australia and New Zealand for population data





Millennium issue

PRICES AND WAGES

Dec 23rd 1999

From The Economist print edition

Yes, mankind can regress too: look how prices rose in 1950-99, as against 1850-1900. Except, oddly, in Japan, industrialisation curbed them—as it should. Earlier centuries were nearer ours: wars (notably Napoleon's) repeatedly rammed up prices. The Black Death of 1347-51 gave Europe its first big wage-push inflation, after huge, but brief, real-wage rises.

% change at annual rate

	Consumer prices			
	1800-50*	1850-1900†	1900-50‡	1950-99
Argentina	na	na	+3.9	+90.0
Australia	na	–1.3	+2.2	+5.8
Britain	–1.0	+0.1	+2.2	+6.1
Canada	na	na	+2.2	+4.2
Denmark	–4.1	+0.3	+2.5	+5.4
France	na	+0.4	+10.3	+5.6
Germany	–0.3	+1.3	+1.7‡‡	+2.9
Italy	na	+0.2	+11.6	+8.7
Japan§§	na	+2.2	+12.3	+2.0
Spain	na	na	+4.8	+8.0
Sweden	+0.3	+0.5	+2.3	+5.6
United States§§	–0.9	–0.1	+2.1	+3.2

	Wages/earnings		
	1850-1900§	1900-50**	1950-99††
Australia	–0.3	+3.0	+6.9
Belgium	+1.4	+1.5	+6.2
Britain	+0.9***	+2.7***	+8.6
Canada	na	+4.5***	+5.4
Denmark	+2.5	+4.2	+7.9
France	+1.4	+10.4	+8.7
Germany	+1.7	–0.2	+6.1†††
Italy	+1.5	+12.9	+9.2
Japan	na	+18.4	+7.8
Spain	na	na	+13.2
Sweden	+2.3	+4.1	+7.9
United States	+0.6***	+3.6***	+4.8

Starting points between: *1800 and 1830; †1850 and 1869; ‡1900 and 1914; §1850 and 1871; **1900 and 1926; ††1950 and 1963.
‡‡Excluding hyper-inflation in the 1920s. §§Wholesale prices. ***Agriculture. †††Western
Sources: B.R. Mitchell; national statistics; Primark Datastream

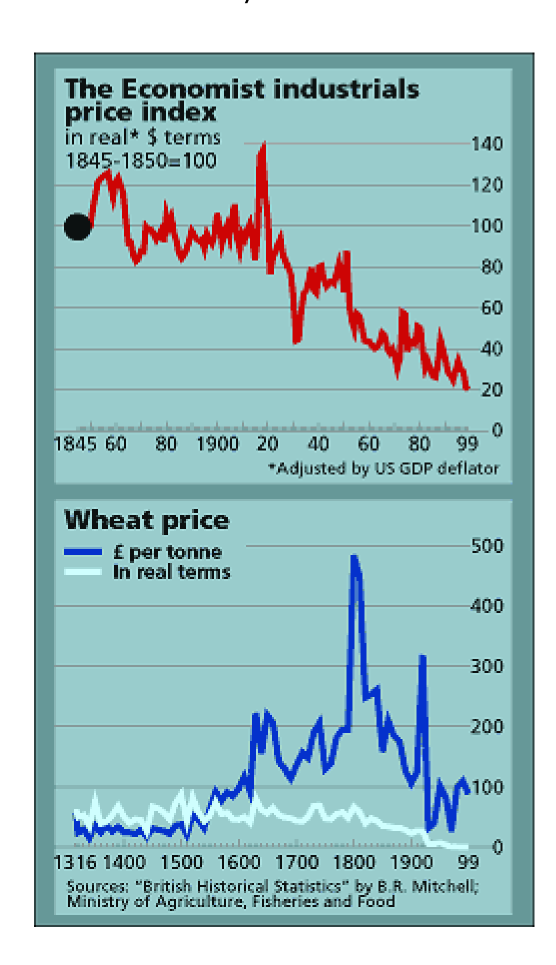
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COMMODITY PRICE INDEX

Dec 23rd 1999

From The Economist print edition

Our dollar-based industrial items index has been falling fairly steadily since its inception in 1845. Increases have usually been connected with wars, particularly the first world war and the Korean war. The depression of the 1930s pushed prices the other way. But it is not only metals and other industrial commodities whose prices have been on a downward-sloping trend. In real terms, English wheat prices have fallen by 99.5% from their level in 1316. Most of this decline has occurred in the past couple of hundred years. In money terms, the price of a tonne of wheat is only 40% higher than it was in Exeter in 1316. The best days for farmers' wheat income were in the early 1500s.



Millennium issue

Sources

Dec 23rd 1999

From The Economist print edition

Our special issue on what has mattered most during the millennium was edited by Stephen Hugh-Jones.

Scores of books have directly aided the research behind this survey of the millennium, and no doubt thousands at one remove. Among the scores are some to which it is especially indebted, but not named in the text. These (not all are in print) are:

Akbar and his India, edited by Irfan Habib. Oxford University Press.

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